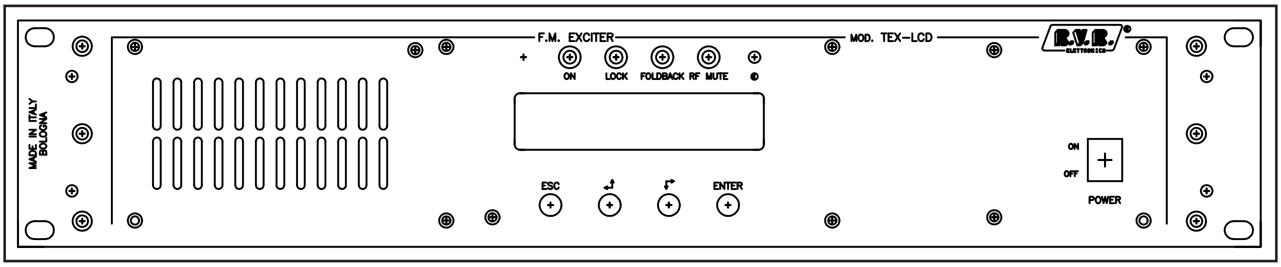
TEX LCD



User Manual

Manufactured by R.V.R. ELETTRONICA Italy

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Revision History

Version	Date	Reason	Editor
1.0	18/01/2002	New version	D. Canazza
1.1	06/09/2002	Add telemetry board	J. Berti

TEX LCD - User Manual
Version 1.1

R.V.R. Elettronica SpA
Via del Fonditore 2/2c - 40138 - Bologna (Italia)
Telefono: +39 051 6010506
Fax: +39 051 6011104
Email: info@rvr.it
Web: www.rvr.it

Notification of intended purpose and limitations of product use
This product is a FM transmitter intended for FM audio broadcasting. It utilises operating frequencies not harmonised in the intended countries of use.
The user must obtain a license before using the product in intended country of use. Ensure respective country licensing requirements are complied with.
Limitations of use can apply in respect of operating freuency, transmitter power and/or channel spacing.

Declaration of Conformity
Hereby, R.V.R. Elettronica SpA, declares that this FM transmitter is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

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1. Preliminary Instructions

This manual is written as a general guide for those having previous knowledge and experience with this kind of equipment, well conscious of the risks connected with the operation of electrical equipment.

It is not intended to contain a complete statement of all safety rules which should be observed by personnel in using this or other electronic equipment.

The installation, use and maintenance of this piece of equipment involve risks both for the personnel performing them and for the device itself, that shall be used only by trained personnel.

R.V.R. Elettronica SpA doesn't assume responsibility for injury or damage resulting from improper procedures or practices by untrained/unqualified personnel in the handling of this unit.

Please observe all local codes and fire protection standards in the operations of this unit.

WARNING: always disconnect power before opening covers or removing any part of this unit.
Use appropriate grounding procedures to short out capacitors and high voltage points before servicing.

WARNING: this device can irradiate radio frequency waves, and if it's not installed following the instructions contained in the manual and local regulations it could generate interferences in radio communications.
This is a "CLASS A" equipment. In a residential place this equipment can cause hash. In this case can be requested to user to take the necessary measures.

R.V.R. Elettronica SpA reserves the right to modify the design and/or the technical specifications of the product and this manual without notice.

2. Warranty

Any product of **R.V.R. Elettronica** is covered by a 24 (twenty-four) month warranty.

For components like tubes for power amplifiers, the original manufacturer's warranty applies.
R.V.R. Elettronica SpA extends to the original end-user purchaser all manufacturers warranties which are transferrable and all claims are to be made directly to R.V.R. per indicated procedures.

Warranty shall not include:

1 danni verificatisi durante la spedizione della macchina alla R.V.R. per eventuali riparazioni;

2 Any unauthorized repair/modification;

3 Incidental/consequential damages as a result of any defect

4 Nominal non-incidental defects

5 Re-shipment costs or insurance of the unit or replacement units/parts

Any damage to the goods must be reported to the carrier in writing on the shipment receipt.

Any discrepancy or damage discovered subsequent to delivery, shall be reported to **R.V.R. Elettronica** within **5** (five) days from delivery date.

To claim your rights under this warranty, you shold follow this procedure:

1 Contact the dealer or distributor where you purchased the unit. Describe the problem and, so that a possible easy solution can be detected.

  Dealers and Distributors are supplied with all the information about problems that may occur and usually they can repair the unit quicker than what the manufacturer could do. Very often installing errors are discovered by dealers.

2 If your dealer cannot help you, contact **R.V.R. Elettronica** and explain the problem. If it is decided to return the unit to the factory, **R.V.R. Elettronica** will mail you a regular authorization with all the necessary instructions to send back the goods.

3 When you receive the authorization, you can return the unit. Pack it carefully for the shipment, preferably using the original packing and seal the package perfectly. The customer always assumes the risks of loss (i.e., R.V.R. is never responsible for damage or loss), until the package reaches R.V.R. premises. For this reason, we suggest you to insure the goods for the whole value. Shipment must be effected C.I.F. (PREPAID) to the address specified by R.V.R.'s service manager on the authorization

DO NOT RETURN UNITS WITHOUT OUR AUTHORIZATION AS THEY WILL BE REFUSED

4 Be sure to enclose a written technical report where mention all the problems found and a copy of your original invoice establishing the starting date of the warranty.

Replacement and warranty parts may be ordered from the following address. Be sure to include the equipment model and serial number as well as part description and part number.

R.V.R. Elettronica SpA
Via del Fonditore, 2/2c
40138 BOLOGNA
ITALY
Tel. +39 051 6010506

3. First Aid

The personnel employed in the installation, use and maintenance of the device, shall be familiar with theory and practice of first aid..

3.1 Treatment of electrical shocks

3.1.1 If the victim is not responsive

Follow the A-B-C's of basic life support

- Place victim flat on his backon a hard surface.
- Open airway: lift up neck, push forehead back (Fig. 3-1).
- clear out mouth if necessary and observe for breathing
- if not breathing, begin artificial breathing (Figure 3-2): tilt head, pinch nostrils, make airtight seal, four quick full breaths. Remember mouth to mouth resuscitation must be commenced as soon as possible

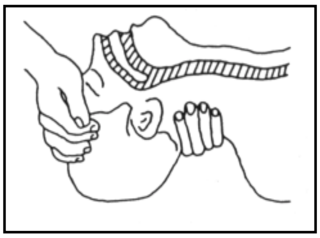


Figure 3-1

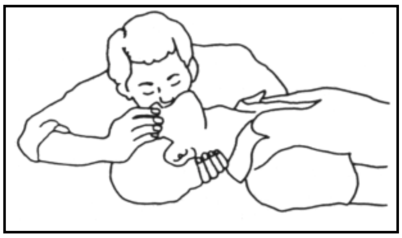


Figure 3-2

- Check carotid pulse (Fig 3-3); if pulse is absent, begin artificial circulation (Fig. 3-4) depressing sternum (Fig. 3-5)

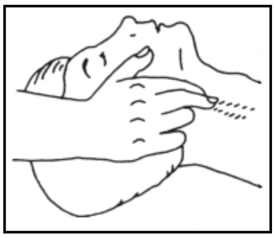


Figure 3-3



Figure 3-4

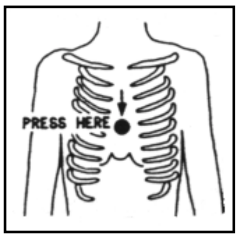


Figure 3-5

- In case of only one rescuer, 15 compressions alternated to two breaths.
- If there are two rescuers, the rythm shall be of one brath each 5 compressions.
- Do not interrupt the rythm of compressions when the second person is giving breath.
- Call for medical assistance as soon as possible.

3.1.2 If victim is responsive

- Keep them warm
- Keep them as quiet as possible
- Loosen their clothing (a reclining position is recommended)
- Call for medical help as soon as possible

3.2 Treatment of electrical Burns

3.2.1 Extensive burned and broken skin

- Cover area with clean sheet or cloth
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible.
- If arms or legs are affected keep them elevated

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (half a glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs

DO NOT give alcohol

3.2.2 Less severe burns

- Apply cool (not ice cold) compresses using the cleansed available cloth article.
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
- Apply clean dry dressing if necessary.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible
- If arms or legs are affected keep them elevated.

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4. General Description

The TEX LCD is an exciter for Frequency Modulated audio broadcasting in a frequency modulation able to transmit in the band between 87.5 and 108 MHz with an output RF power adjustable up to a maximum of 30 W

Outstanding audio features this device has are low distortion and intermodulation values (typically 0.03%) and the high signal to noise ratio (typically 80 dB). Another important feature the TEX LCD has is its great simplicity of construction and use. For example, the mains power supply is universal type and allows any voltage between 90 V and 260 V to be used without having to select it manually.

The TEX LCD was designed to be modular. Its various functions are run from modules directly connected to each other with male and female connectors or with flat cables ending in connectors. This type of design makes maintenance operations and any required module replacement easier. All models are made with SMD technology.

This exciter contains a low-pass filter that reduces the harmonic emissions to below the limits allowed by international regulations, and can therefore be used as a transmitter connected directly to the antenna.

The machine is offered in two versions, one for Mono or MPX input (wideband input that is useful when you want to transmit in stereo using an external stereo encoder) and the other with an integrated stereo encoder. The TEX LCD stereo encoder guarantees excellent stereo separation together with a low harmonic distortion level. Also the stereo version of the exciter can be configured for operating in Mono/MPX mode (meaning excluding the stereophonic coder and using the "left" input as the "mono" input and the BNC as the "MPX").

The user can do the configuration through microswitches that are accessible from the outside.
Both versions have two inputs (SCA1 and SCA2) for modulated signals on subcarriers from special external encoders normally used in Europe for RDS (Radio Data System) transmission.

This exciter contains two types of control circuits, the "analogue" type made as hardware inside the power amplifier and the "digital" type made by the management software on a microcontroller. The analogue control maintains the RF output power at a constant level and limits it in case there is an excess of stationary waves.

The microprocessor system includes an LCD display and push-button panel for interaction with the user, and implements the following functions:

- Setting the output power
- Setting the operating frequency
- Activation and deactivation of power delivery
- Measurement and display of the working parameters of the exciter
- Communications with outside devices

The exciter's management software is based on a menu system. The user can navigate between the various submenus by using four push buttons: ESC, LEFT/ UP, RIGHT/DOWN and ENTER.

Four LEDs indicate the machine status and are found on the front panel: ON, LOCK, FOLDBACK and RF MUTE.

The exciter has one input for external 24 VDC power supply. This source of auxiliary power supply, which the user can make through buffer batteries, is used automatically in the case of mains voltage failure.

5. Quick guide for installation and use

This chapter contains the necessary information for installing and using the machine. In the event any aspects are not completely clear, for example when using the machine for the first time, we recommend you carefully read the entire description contained in this manual.

5.1 Preparation

Unpack the exciter and before doing any other operation, be sure it has not been damaged during transport. In particular check that all the connectors are in perfect condition.

The main fuse can be accessed from the outside on the rear panel (see figures 6.2 and 6.3). Extract the fuse carrier with a screwdriver to check its integrity or for replacement, if necessary. The fuse to be used is this type:

3.15 A 5X20

Check that the TEX LCD switches are in the "off" position. The exciter has two switches: one is incorporated in the VDE base for the mains power supply cable and completely interrupts the machine's mains power supply, whereas the second one is on the front panel and inhibits the switching power supply of the machine.

Connect the RF output of the exciter to the antenna cable or to a fictitious load able to dissipate the power generated by the TEX LCD.

Connect the mains cable to the special VDE base.

NOTE: It is crucial that the mains system be provided with earthing to ensure both the operators' safety and correct operation of the device.

Connect the audio cables of the signal source to the proper connectors on the back of the exciter.

5.2 Use

Energize the exciter by putting the switch found on the rear panel in the "I" position (on) and turn it on with the switch found on the front panel.

Enter the "Set" menu and set the desired operating frequency. See chapter 5.4 for a description of the various menus..

By using the switches and trimmer found on the rear panel, set the characteristics (impedance, preemphasis and, if it’s necessary, stereo/mono) and the levels of the audio and RDS inputs (if used).

NOTE: When the device leaves the factory, it is delivery with the output power adjustment at minimum and in the OFF position. It is however recommended that you always check the set level before activating power supply, especially if the machine is used as a modulator for a power amplifier.

Set the desired power level from the predefined menu.

Activate the RF power output from the "Fnc" menu.

5.3 Settings and calibration

The only adjustments to be manually made on the TEX LCD are those relating to the audio operation levels and modes..

A trimmer for each one of the exciter's inputs is on the rear panel of the device. The printing on the panel indicates which input each trimmer refers to. The sensitivity of the various inputs can be adjusted using the trimmers within the limits described in the following tables:

- Input sensitivity - mono version

Input	Figure 6.2	Trimmer	Sensitivity	Notes
RDS	[5]	[6]	-20 ÷ +13 dBm	Input level for 2.0 kHz deviation
SCA1	[4]	[18]	- 8 ÷ +13 dBm	Input level for 7.5 kHz deviation
SCA2	[16]	[17]	- 8 ÷ +13 dBm	
MPX	[20]	[19]	-13 ÷ +13 dBm	Input level for 75 kHz deviation
Mono	[8]	[7]	-13 ÷ +13 dBm	

- Input sensitivity - stereo version

Input	Figure 6.3	Trimmer	Sensitivity	Notes
RDS	[8]	[9]	-20 ÷ +13 dBm	Input level for 2.0 kHz deviation
SCA1	[7]	[21]	- 8 ÷ +13 dBm	Input level for 7.5 kHz deviation
SCA2	[19]	[20]	- 8 ÷ +13 dBm	
Left	[23]	[22]	-13 ÷ +13 dBm	Input level for 75 kHz overall deviation
Right	[11]	[10]	-13 ÷ +13 dBm	(i.e. comprising channels + pilot tone)

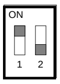
When adjusting the sensitivity level of the inputs, keep in mind that the instantaneous modulation level is given in the predefined menu and that an indicator signals the 75 kHz level. To get a proper adjustment, we recommend you put a level signal on the machine's output equivalent to the level of its own audio program and adjust the relative trimmer until the instantaneous deviation coincides with the indication of 75 kHz.

To adjust the levels of the inputs of the subcarriers, you can use a similar procedure while getting help from the "X10" option that can be selected from the Fnc menu. With this option, the modulation level indicated is multiplied by a factor 10 so the drawn indication of the predefined menu coincides with a deviation value of 7.5 kHz.

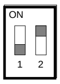
For the stereophonic version, there is a special menu in which the levels of the Right and Left channels are indicated separately with the relative indicators of the nominal levels for the maximum deviation of 75 kHz.

The positions of the DIP switches that are used to select the available options are indicated on the printing.

- Mono version preemphasis (switch [17] Figure 6.2):

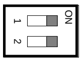


50 µs



75 µs

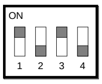
- Mono version impedances of input (switch [23] Figure 6.2):



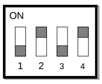
Switch 1: XLR input impedance, ON = 600 Ω, OFF = 10 kΩ

Switch 2: BNC input impedance, ON = 50 Ω, OFF = 10 kΩ

- Stereo version preemphasis (switch [7] Figure 6.3):

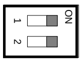


50 µs



75 µs

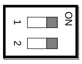
- L and R input impedance (type XLR) (switch [25] Figure 6.3):



Switch 1: R XLR input impedance, ON = 600 Ω, OFF = 10 kΩ

Switch 2: L XLR input impedance, ON = 600 Ω, OFF = 10 kΩ

- Operation mode/input impedance MPX ([8] Figure 6.3)
(switch [6] Figure 6.2):



Switch 1: Operation mode ON = Mono, OFF = Stereo

Switch 2: MPX input impedance, ON = 50 Ω, OFF = 10 kΩ

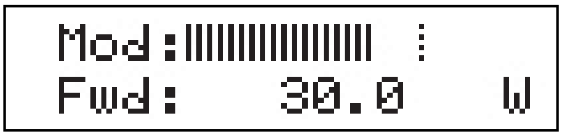
5.4 Software

The machine is provided with a two-line LCD display where a set of menus is shown. An overall view of the machine's menus is given in figure 5-1.

One of the following symbols may be present on the left side of the display, depending on the case:

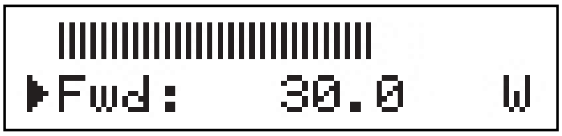
- The parameter highlighted by the arrow can be modified
- The arrow points out the current line, the parameter of which cannot be modified. This symbol is present in the menus made up of more than two lines to help scroll the menu.

When turned on, the LCD display shows the predefined screen with the graphic representation of the instantaneous modulation level and indication of the direct power supplied:



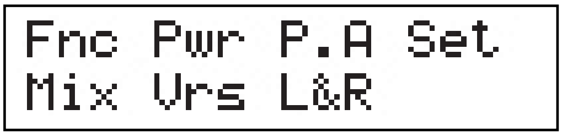
The vertical bars under "Mod" indicate the progress of the modulation in real time; the hatched bar signals the maximum nominal modulation level of 75 kHz (100%).

To change the set power level, select the line relating to the power with the DOWN push button and keep the ENTER push button pressed until it enters the modification mode. The screen that is shown in the modification mode is similar to the following:



The bottom line gives the instantaneous reading of the power (30W in this example), whereas the bar indicates the set level. To increase the level, press the RIGHT/ DOWN push button and to reduce it, press LEFT/UP. As the set level increases or decreases, the bar becomes longer or shorter to display the current setting. When the desired level is reached, press ENTER to confirm and exit the predefined menu. Note that the set value is stored anyway, so if you press ESC or let the timeout go by without pressing a key, the power will remain at the last set level.

If you press the ESC push button while you are in the predefined menu, you will be shown the following selection screen from which you can access all the other menus:



To enter one of the submenus, select its name (which will be underlined by a blinking cursor) with the RIGHT or LEFT push buttons and then press the ENTER push button.

If you instead want to go back to the predefined menu, all you have to do is press the ESC push button again..

Figure 5.1 shows the complete set of the machine's menus.

NOTE: The "L&R" menu is active only in the stereo version. The writing "L&R" appear in the selection menu of the mono version, but doesn’t have any meaning.

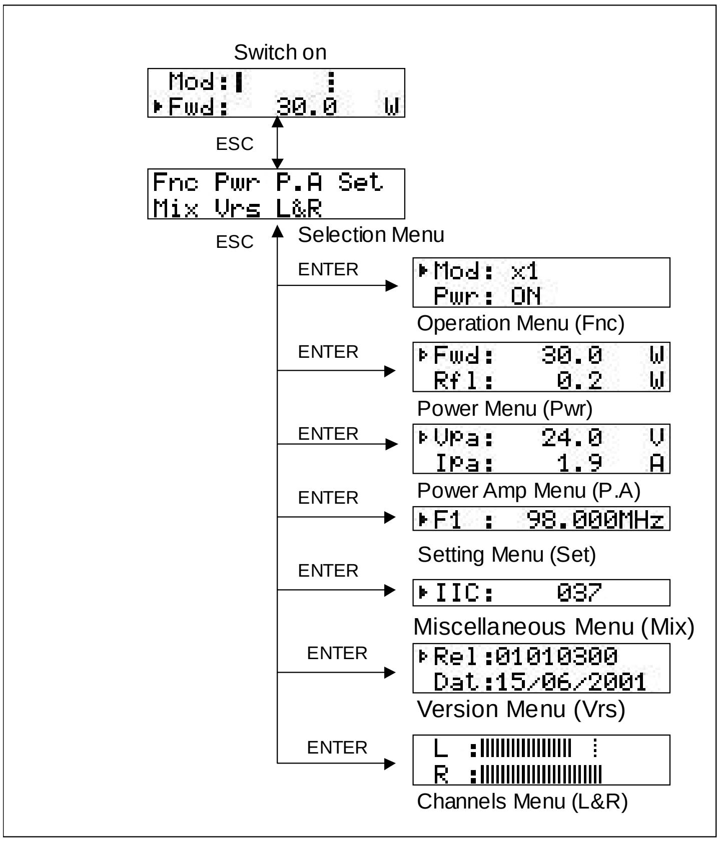
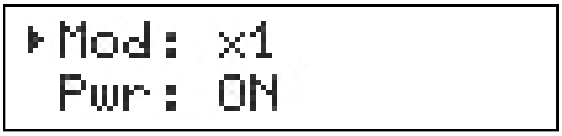


Figure 5.1

5.4.1 Operation Menu (Fnc)



The user can set the deviation display mode and activate or deactivate the supply of power from the exciter from this menu.

To work with one of the two functions, select the relative line with the UP and DOWN push buttons and then press and continue pressing the ENTER push button until the command is accepted. This was the Pwr setting will go from On to Off or vice versa and the Mod setting will go from "X1" to "X10" or vice versa.

The indication of the instantaneous deviation is multiplied by a factor 10 in the "X10" mode, so the hatched indicator on the predefined menu will coincide with the 7.5 kHz value instead of 75 kHz. This display mode is useful when you want to view low deviation levels such as, for example, those due to the pilot tone or to the subcarriers.

5.4.2 Power Menu (Pwr)

This screen shows the user the measures relating to the exciter’s RF power output:

- Forward Power (Fwd)
- Reflected Power (Rfl)

```
▸Fwd:   30.0   W
 Rfl:    0.2   W
```

The values shown are "readings", and therefore cannot be modified (note the empty triangle). To modify the power setting, use the predefined menu as described above.

5.4.3 Power Amplifier Menu (P.A)

This screen, consisting of three lines that can be scrolled with the UP and DOWN push buttons, shows the user the measures relating to the device's final power amplifier:

- Voltage (VPA)
- Current consumption (IPA)
- Temperature (TMP)

```
▸Vpa:   24.0   V
 Ipa:    1.9   A
 Tmp:   27.8   C
```

5.4.4 Settings Menu (Set)

This menu lets you read and set the operating frequency.

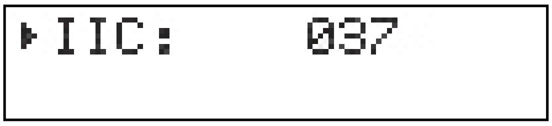
```
▸F1 :  98.000MHz
```

By pressing the ENTER push button, you can modify the set frequency using the UP (the frequency increases) and DOWN push buttons.

After having set a new frequency value, press the ENTER push button to confirm the choice. The exciter will release from the current frequency (the LOCK LED turns off) and it will latch onto the new operating frequency (LOCK turns back on). Instead, if you press ESC or let the timeout go by, the frequency will remain set at the previous value.

5.4.5 Miscellaneous Menu (Mix)

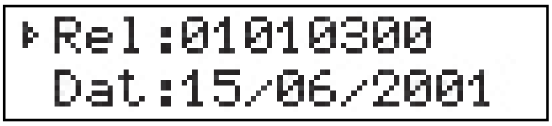
This menu allows you to set the machine's address in a o I^{2}C type of serial bus connection:



The I²C network address is important when the exciter is connected to an RVR transmission system that envisages use of this protocol. We recommend you do not modify it without a good reason.

5.4.6 Versions Menu(Vrs)

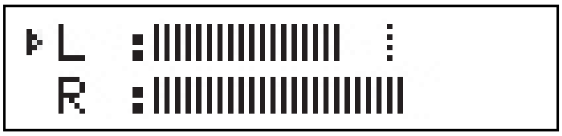
This screen shows the version and the release date of the software.



5.4.7 Channels Menu (L&R)

This menu is active in the stereo version of the machine and in the mono version, but in the mono version the menu doesn't have any meaning.

The right and left channel input levels are depicted with vertical bars, as shown in the following figure.



The hatched bar indicates the level that corresponds with the total deviation at 100%, and is useful to regulate the input levels of the audio channels.

Please note that if you set a stereo TEX-LCD exciter for mono operation, this menu is still active, and it will only show the level of the mono input.
Please remember that the modulation level is always shown by the default menu.

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6 External Description

This chapter reports the elements of the front and rear panels of the TEX-LCD with a brief description of each of them.

6.1 Front Panel

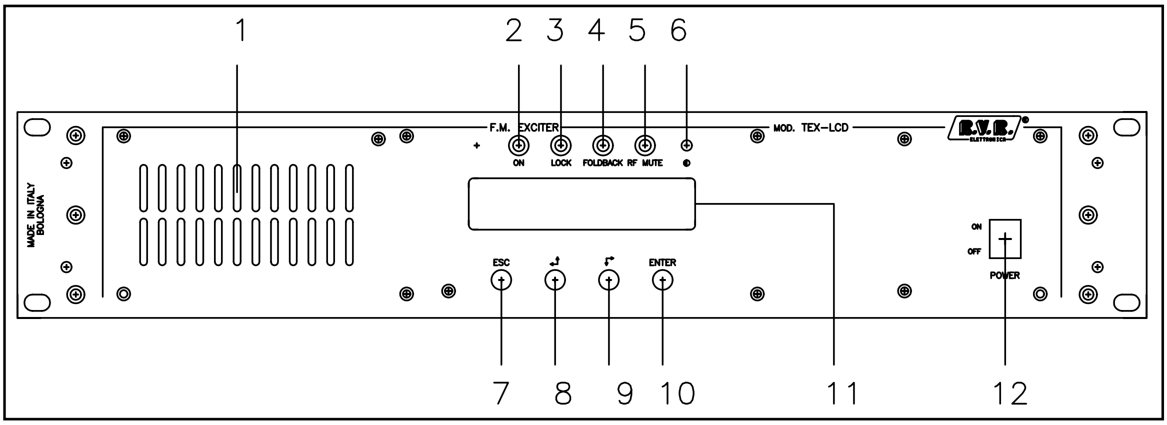


Figure 6.1

[1]	AIR FLOW	Grid for the intake of the air flow of the forced ventilation
[2]	ON	Green LED, lit when the exciter is working
[3]	LOCK	Green led, lit when the PLL is locked on the working frequency
[4]	FOLDBACK	Yellow LED, lit when the foldback function is operating (automatic reduction of the delivered RF power)
[5]	R.F. MUTE	Yellow LED, lit when the exciter's power output is inhibited by an external interlock command
[6]	CONTRAST	Display contrast adjusting trimmer
[7]	ESC	Push button to exit from a menu
[8]	LEFT/UP	Push button to move in the menu system and to modify the parameters
[9]	RIGHT/DOWN	Push button to move in the menu system and to modify the parameters
[10]	ENTER	Push button to confirm a parameter and to enter in a menu
[11]	DISPLAY	Liquid crystals display
[12]	POWER	ON/OFF switch. This switch disables the exciter without disconnecting the mains supply

6.2 Rear Pannel (MONO version with telemetry)

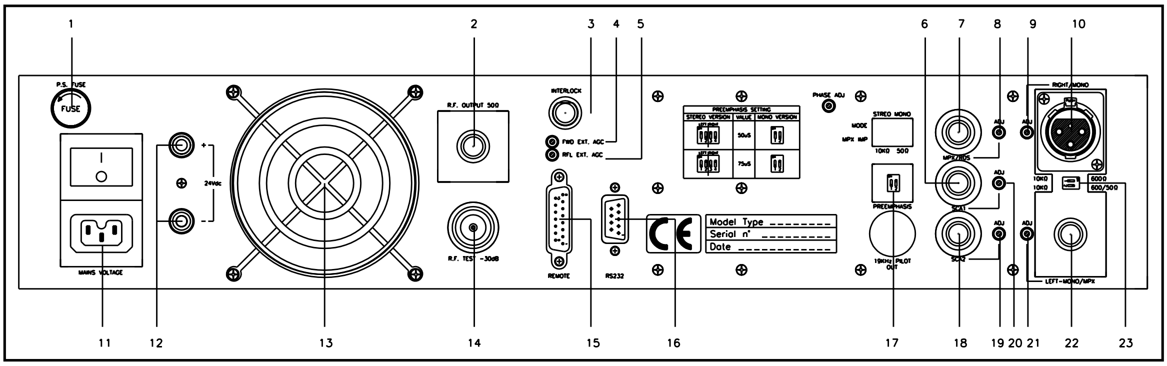


Figure 6.2

[1] FUSE	Fuse holder. Use a screwdriver to access the fuse Contains the general protection fuse rated 3.15 A
[2] R.F. OUTPUT	RF output connector, N-type, 50Ω.
[3] INTERLOCK	BNC interlock connector: the exciter is forced in stand-by mode when the inner conductor is grounded.
[4] FWD EXT. AGC	Trimmer for the control of the delivered power in function of the income FWD fold (see cap. 6.4.2)
[5] RFL EXT. AGC	Trimmer for the control of the delivered power in function of the income RFL fold (see cap. 6.4.2)
[6] SCA 1	BNC connector, SCA1 unbalanced input
[7] MPX/RDS	BNC connector, MPX unbalanced input
[8] MPX/RDS ADJ	Adjustment trimmer for MPX input
[9] RIGHT/MONO ADJ	Adjustment trimmer for the Mono input
[10] RIGHT/MONO	XLR connector for balanced Mono audio input
[11] PLUG	Mains supply plug, 90 - 260V 50-60 Hz
[12] 24 VDC IN	External 24Vdc supply input. Positive (red) and negative (black)
[13] FAN	Fan for the forced ventilation of the exciter
[14] R.F. TEST POINT	RF test output, approx. -30 dB wrt the RF output power level
[15] REMOTE	DB9 connector for telemetry of the machine
[16] RS232	DB9 connector for interconnection with other devices and for factory parameters programming
[17] PREENPHASIS	Dip-switch to set the preenphasys at 50 or 75 μs. The preenphasys setting is only relevant for the mono input, while MPX input is unaffected by this setting
[18] SCA 2	BNC connector, SCA2 unbalanced input
[19] SCA2 ADJ	Adjustment trimmer for SCA2 input
[20] SCA1 ADJ	Adjustment trimmer for SCA1 input
[21] LEFT-MONO/MPX ADJ	Adjustment trimmer for MPX input
[22] LEFT-MONO/MPX	BNC connector, MPX unbalanced input
[23] IMPEDANCE	Dip-switch to set the input impedance 600Ω or 10kΩ for the mono input 50Ω or 10kΩ for the MPX input

6.3 Rear Pannel (STEREO version with telemetry)

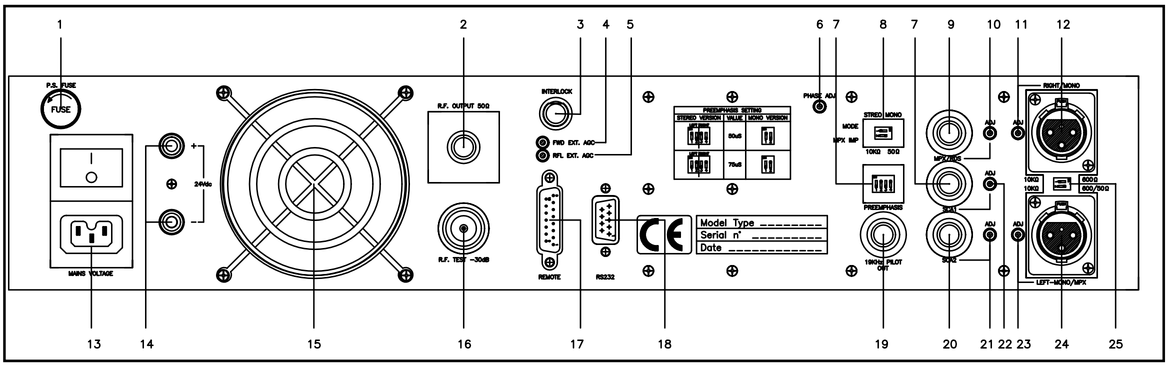


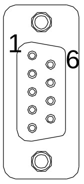
figure 6.3

[1] FUSE	Fuse holder. Use a screwdriver to access the fuse Contains the general protection fuse rated 3.15 A
[2] R.F. OUTPUT	RF output connector, N-type, 50Ω.
[3] INTERLOCK	BNC interlock connector: the exciter is forced in stand-by mode when the inner conductor is grounded.
[4] FWD EXT. AGC	Trimmer for the control of the delivered power in function of the income FWD fold (see cap. 6.4.2)
[5] RFL EXT. AGC	Trimmer for the control of the delivered power in function of the income RFL fold (see cap. 6.4.2)
[6] PHASE ADJ	Pilot tone phase adjustment trimmer
[7] PREENPHASIS	Dip-switch to set the preenphasys at 50 or 75 μs. The preenphasys setting is only relevant for the Left and Right inputs in stereo mode and for the mono input in mono mode, while MPX input is unaffected by this setting
[8] MODE/MPX IMP	Dip-switch to set the operation mode (STEREO or MONO) and the MPX input impedance, 50Ω or 10kΩ.
[9] SCA 1	BNC connector, SCA1 unbalanced input
[10] MPX/RDS	BNC connector, MPX unbalanced input
[11] MPX/RDS ADJ	Adjustment trimmer for MPX input
[12] RIGHT/MONO ADJ	Adjustment trimmer for the Right channel input
[13] RIGHT/MONO	XLR connector, balanced Right channel input
[14] PLUG	Mains supply plug, 90 - 260V 50-60 Hz
[15] 24VDC IN	External 24Vdc supply input. Positive (red) and negative (black)
[16] FAN	Fan for the forced ventilation of the exciter
[17] R.F. TEST POINT	RF test output, approx. -30 dB wrt the RF output power level
[18] REMOTE	DB9 connector for telemetry of the machine
[19] RS232	DB9 connector for interconnection with other devices and for factory parameters programming
[20] 19 KHZ PILOT	BNC output for the 19 kHz pilot tone. This can be used for external devices (e.g. RDS coders) synchronization
[21] SCA 2	BNC connector, SCA2 unbalanced input
[22] SCA2 ADJ	Adjustment trimmer for SCA2 input
[23] SCA1 ADJ	Adjustment trimmer for SCA1 input
[24] LEFT-MONO/MPX ADJ	Adjustment trimmer for Left-Mono channel input
[25] LEFT-MONO/MPX	XLR connector, balanced Left-Mono channel input
[26] IMPEDANCE	Dip-switch to set the balanced input impedance, 600Ω or 10kΩ

6.4 Connectors description

6.4.1 RS232

Type: DB9 female

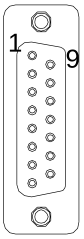


1 NC
2 TX_D
3 RX_D
4 Internally connected with 6
5 GND
6 Internally connected with 4
7 Internally connected with 8
8 Internally connected with 7
9 NC

Note: pins 6, 7 and 8 are for factory programming and should not be connected

6.4.2 Remote

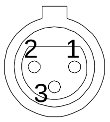
Type: DB15 female



1 Interlock
2 FWD fold
3 GND
4 SDA IIC Bus
5 VPA Tlm
6 FWD tlm
7 Power Good
8 GND
9 GND
10 RFL fold
11 SCL IIC Bus
12 IPA Tlm
13 RFL Tlm
14 On cmd
15 OFF cmd

6.4.3 Left (MONO) / Right (MPX)

Type: XLR female



1 GND
2 Positive
3 Negative

6.5 Rear Pannel (Mono version)

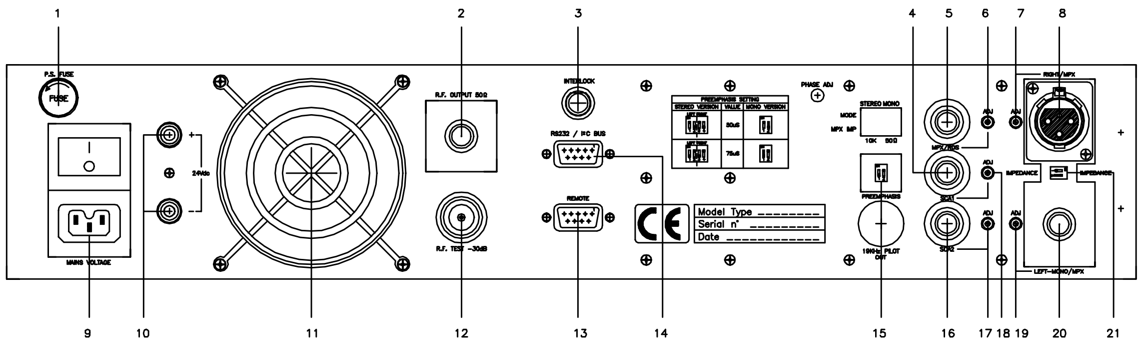


Figure 6.5

[1] FUSE	Fuse holder. Use a screwdriver to access the fuse Contains the general protection fuse rated 3.15 A
[2] R.F. OUTPUT	RF output connector, N-type, 50Ω.
[3] INTERLOCK	BNC interlockconnector: the exciter is forced in stand-by mode when the inner conductor is grounded.
[4] SCA 1	BNC connector, SCA1 unbalanced input
[5] MPX/RDS	BNC connector, MPX unbalanced input
[6] MPX/RDS ADJ	Adjustment trimmer for MPX input
[7] RIGHT/MPX ADJ	Adjustment trimmer for the Mono input
[8] RIGHT/MPX	XLR connector for balanced mono audio input
[9] PLUG	Mains supply plug, 90 - 260V 50-60 Hz
[10] 24 VDC IN	External 24Vdc supply input. Positive (red) and negative (black)
[11] FAN	Fan for the forced ventilation of the exciter
[12] R.F. TEST POINT	RF test output, approx. -30 dB wrt the RF output power level
[13] REMOTE	DB9 connector for serial communications and via modem
[14] RS232/I^{2}C BUS	DB9 connector for I^{2}C standard communication
[15] PREENPHASIS	Dip-switch to set the preenphasys at 50 or 75 µs. The preenphasys setting is only relevant for the mono input, while MPX input is unaffected by this setting
[16] SCA 2	BNC connector, SCA2 unbalanced input
[17] SCA2 ADJ	Adjustment trimmer for SCA2 input
[18] SCA1 ADJ	Adjustment trimmer for SCA1 input
[19] LEFT-MONO/MPX ADJ	Adjustment trimmer for MPX input
[20] LEFT-MONO/MPX	BNC connector, MPX unbalanced input
[21] IMPEDANCE	Dip-switch to set the input impedance 600Ω or 10kΩ for the mono input 50Ω or 10kΩ for the MPX input

6.6 Rear Pannel (Stereo version)

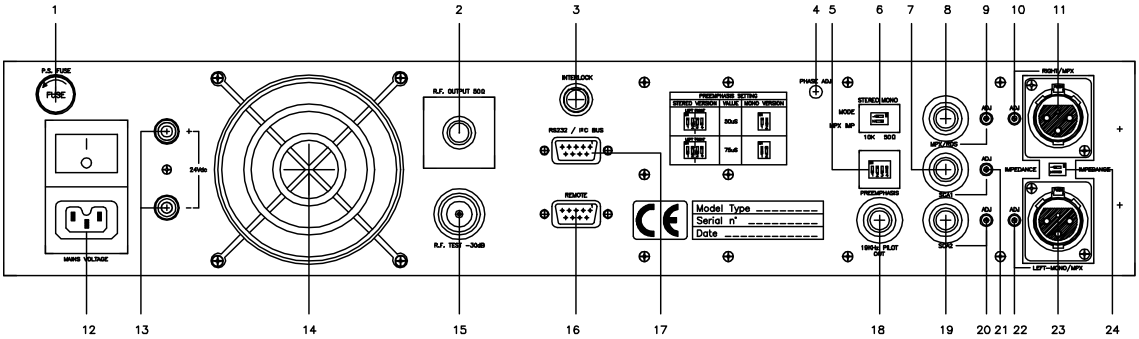


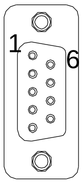
figure 6.6

[1] FUSE BLOCK	Fuse holder. Use a screwdriver to access the fuse Contains the general protection fuse rated 3.15 A
[2] R.F. OUTPUT	RF output connector, N-type, 50Ω.
[3] INTERLOCK	BNC interlockconnector: the exciter is forced in stand-by mode when the inner conductor is grounded.
[4] PHASE ADJ	Pilot tone phase adjustment trimmer
[5] PREENPHASIS	Dip-switch to set the preenphasys at 50 or 75 µs. The preenphasys setting is only relevant for the Left and Right inputs in stereo mode and for the mono input in mono mode, while MPX input is unaffected by this setting
[6] MODE/MPX IMP	Dip-switch to set the operation mode (STEREO or MONO) and the MPX input impedance, 50Ω or 10kΩ.
[7] SCA 1	BNC connector, SCA1 unbalanced input
[8] MPX/RDS	BNC connector, MPX unbalanced input
[9] MPX/RDS ADJ	Adjustment trimmer for MPX input
[10] RIGHT/MPX ADJ	Adjustment trimmer for the Right channel input
[11] RIGHT/MPX	XLR connector, balanced Right channel input
[12] PLUG	Mains supply plug, 90 - 260V 50-60 Hz
[13] 24VDC IN	External 24Vdc supply input. Positive (red) and negative (black)
[14] FAN	Fan for the forced ventilation of the exciter
[15] R.F. TEST POINT	RF test output, approx. -30 dB wrt the RF output power level
[16] REMOTE	DB9 connector for serial communications and via modem
[17] RS232/I2C BUS	DB9 connector for I2C standard communiaction
[18] 19 KHZ PILOT	BNC output for the 19 kHz pilot tone. This can be used for external devices (e.g. RDS coders) synchronization
[19] SCA 2	BNC connector, SCA2 unbalanced input
[20] SCA2 ADJ	Adjustment trimmer for SCA2 input
[21] SCA1 ADJ	Adjustment trimmer for SCA1 input
[22] LEFT-MONO/MPX ADJ	Adjustment trimmer for Left/Mono channel input
[23] LEFT-MONO/MPX	XLR connector, balanced Left/Mono channel input
[24] IMPEDANCE	Dip-switch to set the balanced input impedance, 600Ω or 10kΩ

6.7 Connectors description

6.7.1 RS232 / I²C Bus (USED ONLY FOR PROGRAMMATION)

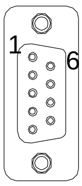
Type: DB9 female



1 GND
2 SDA
3 SCL
4 NC
5 GND
6 Internally used (NOT CONNECTED)
7 Internally used (NOT CONNECTED)
8 Internally used (NOT CONNECTED)
9 GND

6.7.2 Remote (USED FOR RS232 COMMUNICATION)

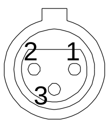
Type: DB9 female



1 NC
2 TX_D
3 RX_D
4 Internally connected with 6
5 GND
6 Internally connected with 4
7 Internally connected with 8
8 Internally connected with 7
9 NC

6.7.3 Left (MONO) / Right (MPX)

Type: XLR female



1 GND
2 Positive
3 Negative

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7. Technical specifications

7.1 Physical specifications

Panel size	483 mm (19”) x 88 mm (3 1/2”) (2 HE)
Depth	344 mm (26 1/2”)
Weight	Circa 6 Kg
Working Temperature	-10 °C ÷ 50 °C

7.2 Electrical specifications

General

RF output power	0 to 30 W, adjustable
RF output connector	"N"-type
RF output impedance	50 Ohm
Frequency range	87.5 MHz ÷ 108 MHz
Frequency setting	Direct software programming
Frequency stability	±1ppm from -10°C to 50°C
Modulation type	Direct carrier modulation
Spurious and Harmonics suppression	Respects relevant FCC and CCIR standards (typical -75 dBc)
Modulation capability	Respects relevant FCC and CCIR standards (typical 240khz MPX/Mono, 210 KHz Stereo)
Asyncronous residual AM	< -70 dB wrt. 100% peak AM
Syncronous residual AM	< -50 dB wrt. 100% peak AM, with 75 kHz deviation @ 400Hz
C.A. power supply	≅ 80 V ÷ 260 V, full-range
C.C. power supply	24 V
Power consumption	120 VA ca.

Input

Left, Right and Mono Input	Type: XLR female balanced or unbalanced
MPX input	Type: BNC, unbalanced
Input impedance	balanced input: 600 or 10 k Ohm selectable unbalanced input: 50 or 10 k Ohm selectable
Input level	-13 dBm ÷ +13 dBm, continuosly adjustable
Preemphasys	Selectable: 0 50 us (CCIR) 75 us (FCC)
SCA/RDS input	3 BNC unbal (2 in the stereo version)
SCA/RDS input impedance	10 kOhm
SCA/RDS input level	-20 dBm ÷ +13 dBm for 2.0 kHz continuosly adjustable
SCA/RDS amplitude/frequency response	± 0.2 dB, 40 kHz to 100 kHz

Output

RF Out:	“N”-type, 50 Ohm
RF Test	BNC connector, -30 dB wrt. carrier level 50 Ohm
19 kHz pilot tone output	BNC connector, 1 Vpp minimum load 4.7 kOhm

MONO operation

S/N	> 80dB wrt. 75 kHz, measured in the band 20 Hz ÷ 20 kHz, 50 us deemph., RMS detect
Amplitude frequency response	± 0.5 dB, 20Hz ÷ 15Khz
Total harmonic distortion (THD)	< 0.05%

MPX operation

composite S/N	> 80dB wrt. 75 kHz, measured in the band 20 Hz ÷ 20 kHz, 50 us deemph., RMS detect
MPX amplitude frequency response	± 0.05 dB, 20 Hz ÷ 53 KHz ± 0.2 dB, 53 KHz ÷ 100 KHz
MPX Total harmonic distortion (THD)	< 0.02 %
Stereo separation	> 55 dB (typ. 60dB, with external stereo coder)

Stereo operation

S/N FM Stereo	> 74 dB wrt. 75 kHz, measured on decoded channels, in the band 20 Hz ÷ 20 KHz, 50 us deemph, RMS detector
Risposta ampiezza/frequenza audio	± 0.5 dB, 20 Hz ÷ 15 KHz
Total harmonic distortion (THD)	≤ 0.05 %
Stereo separation	> 50 dB

Connections

Interlock connector	BNC, inhibits RF power output when shorted
Serial interface	DB9 female RS232
Remote	DB15 female, give indications on the state of the device

8. Working Principles

A schematic view of the modules and connections making up the TEX-LCD with the telemetry board is shown in figure 8.1.

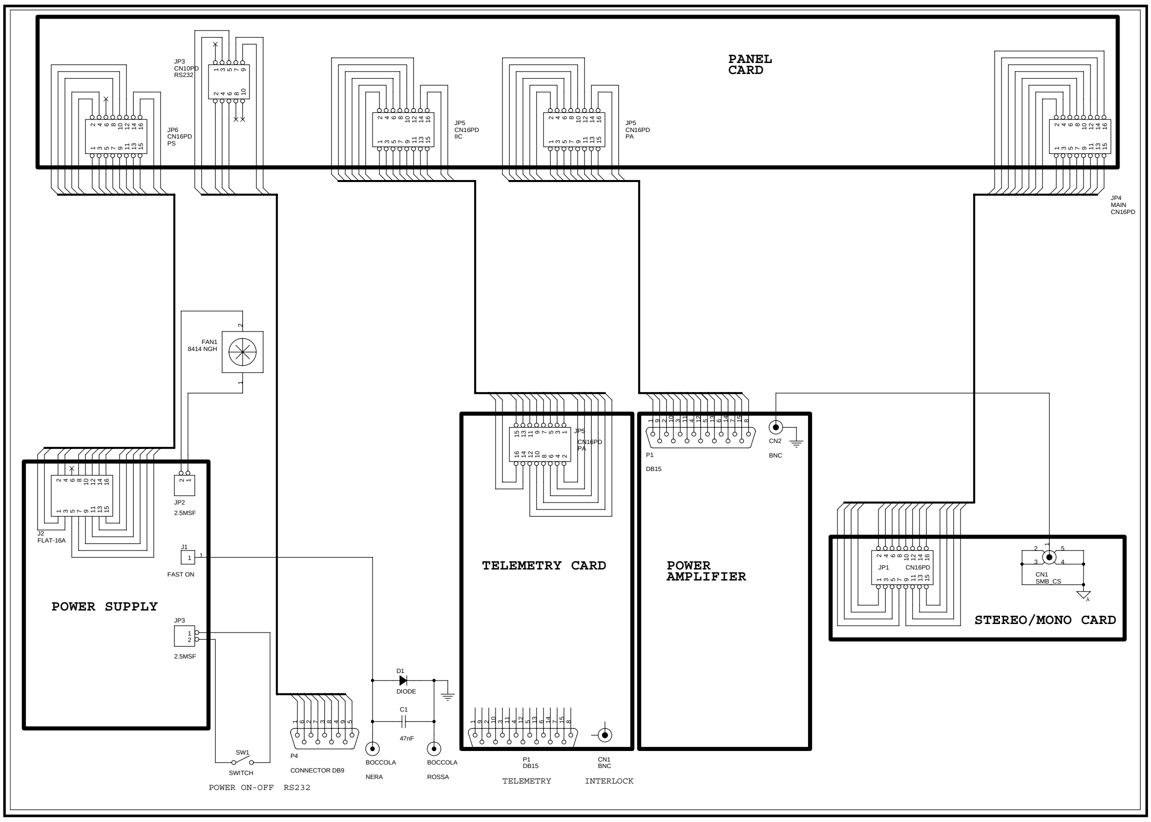


Figure 8.1

In figure 8.2 is shown a schematic view of the modules and connections making up the TEX LCD without telemetry board.

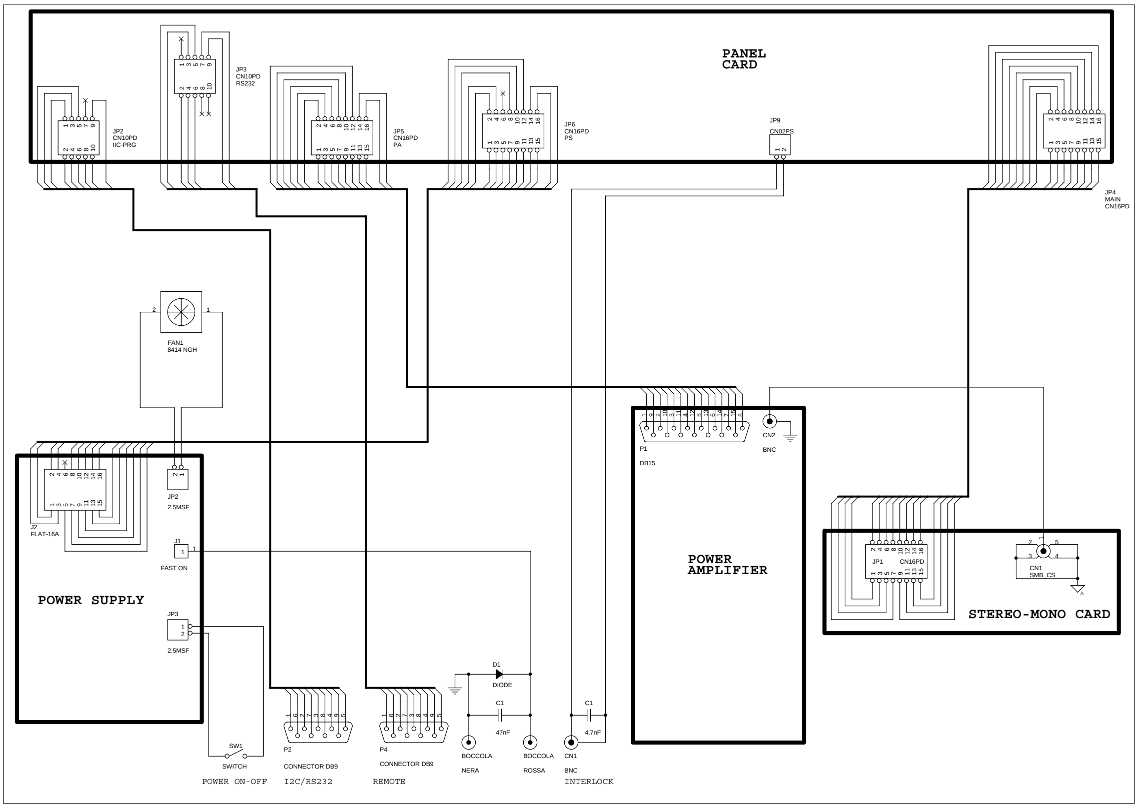


Figure 8.2

Below a brief description of each module's functions is given, whereas the complete diagrams and layout of the cards are given in the appendix.

8.1 Power Supply

TEX-LCD's power supply is a switching type of unit, and its main 26 V output feeds the RF amplifier of the machine. Also the stabilizers for generating continuous 5 V and 18 V voltages for powering the other circuits on the device are present on the power supply. Note that the power supply is the "direct from mains" type, meaning without a transformer, and can be connected to any voltage between 80 and 260 V without having to make adjustments or manual settings. The 24 V auxiliary continuous current inputs are connected on the power supply, and it is used automatically to buffer any absence of mains power supply.

8.2 Panel board

The panel card contains the microcontroller (PIC16F877) that implements the machine's control software, the display and the other components needed to interface the user.

The card interfaces with the other machine modules, both for power supply distribution and for the control and measures.

8.3 Main board

The main card carries out the following functions:

- Audio and SCA input handling
- Generation of carrying frequency
- Modulation
- R.F. amplification (Driver)

The Mono and Stereo versions of this card differ from each other in the audio portion, which contains a stereophonic coded in the stereo version.

8.3.1 Audio input section (mono version)

The audio input section contains the circuits that perform the following functions:

- Input impedance selection
- 15 kHz filtering of the mono channel
- Preemphasis of the mono channel
- Mixing of the mono, MPX and SCA channels
- Clipper (limits the level of the modulating signal so that the frequency deviation does not go past the 75 kHz level)
- Measurement of the modulating signal

8.3.2 Audio input section (stereo version)

In the board are present two filters at 15kHz for the filtering of both the channels L and R, and an integrated stereophonic generator. The others functionalities are the same of the mono version.

8.3.3 PLL/VCO section

This section of the card generates the signal in modulated radiofrequency. It is based on a PLL diagram that uses an MB15E06 type of integrated PLL.

8.3.4 Driver section

Before going to the final power amplifier, the RF signal is pre-amplified in this section through a BFR 540 transistor. When the exciter is put in stand-by, the driver is inhibited.

8.4 Power amplifier

The final power stage is enclosed in a totally shielded metal container fastened in the centre of the device.

The RF signal coming from the "main" card reaches the pilot, is amplified and is then sent to the final stage that sees to its final amplifications up to 30W.

The amplifier is made in three stages. The first is made with two BFR540s in parallel, the second with one BLF244, and the last with one BLW86.

In addition to the actual RF amplification, this circuit carries out the following functions:

- Control of the power level in output, depending on the setting
- Reduction of the power supplied when there are high levels of reflected power
- Measures direct and reflected power through directional couplers
- Measures current absorbed by the power amplifier
- Measures temperature
- Low-pass filtering of the RF signal in output

On this card is an RF sample approximately -30dB compared with the output that is available on a BNC connector underneath the output connector of the transmitter. This sample is useful for checking the characteristics of the carrier, but not of the higher order harmonics.

8.5 Telemetry board

This device is designed to furnish to the user the the state of operation of the machine. All the available input and output signals are replied on the DB15 connector.

On the same board there is also the BNC connector of interlock for disable the device. Closing the central pin to ground, the exit power has reduced to zero until the connection it doesn’t come removed.

When it is used with a R.V.R. amplifier, this connector comes connected through a BNC-BNC connector to the REMOTE or INTERLOCK of the power amplifier. In case of breakdowns of the amplifier, the central conductor is place to ground forcing the device to enter in stand-by mode.

9. Identification and Access to the Modules

9.1 Identification of the Modules

The TEX LCD is made up of various modules connected to each other with connectors so as to make maintenance and any required module replacement easy.

9.1.1 Seen from above

The figure below shows the view from above the machine with the various components pointed out.

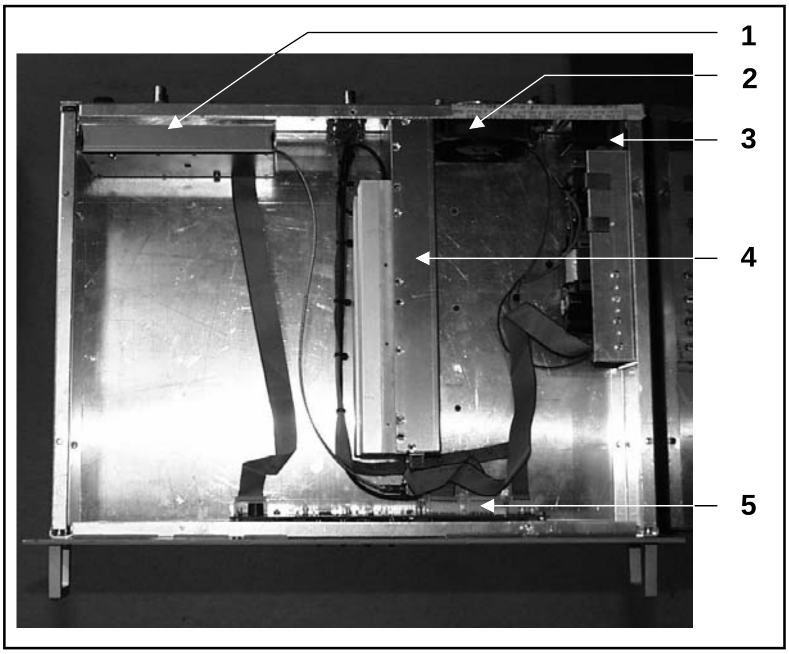


Figure 9.1

[1] Cooling fan
[2] Main card (stereo or mono)
[3] Power supply
[4] Amplifier
[5] Panel card

9.2 Removing the Modules

NOTE: When the exciter is operating with the cover removed, spots subject to dangerous voltage become accessible. Be sure to disconnect the exciter's power supply before starting any maintenance operation.

To reassemble the modules, just follow the operations described in reverse order.

9.2.1 Replacing the main card (both stereo and mono)

- Open the top cover of the machine
- Disconnect the connectors CN1, JP1
- Unscrew the screws that fasten the metal box to the outside chassis
- Extract the module while being careful with the connectors on the rear panel
- Unscrew the four screws that fasten the card to the metal box
- Replace the card

9.2.2 Replacing the power supply

- Open the top cover of the machine
- Disconnect the connector JP2 and J2 of the power supply card
- Unscrew the screws fastening the module to the right side panel
- Extract the module

9.2.3 Replacing the fan

- Open the top cover of the machine.
- Disconnect the connector JP2 of the power supply card
- Unscrew the four screws that fasten the fan to the rear panel
- Remove the fan.

9.2.4 Replacing the panel card

- Open the top cover of the machine
- Disconnect the connectors JP3, JP2, JP4, JP5 and JP6 of the panel card
- Unscrew the front panel fastening screws
- Remove the card.

9.2.5 Replacing the amplifier

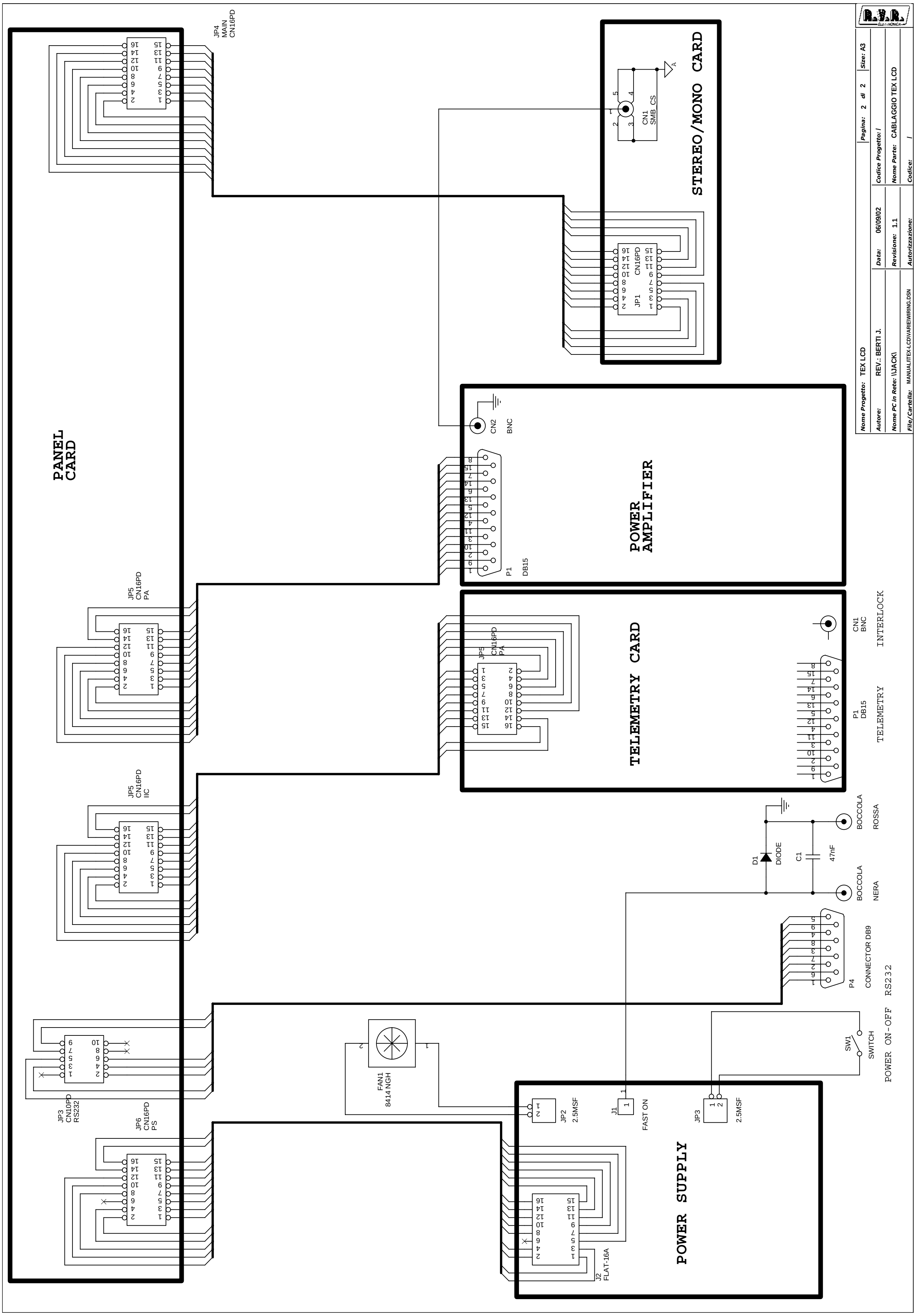
- Open the top cover of the machine
- Disconnect the connectors CN2 and P1 from the module
- Remove the screws that fasten the module to the bottom of the exciter
- To gain access to the card, remove the cover of the module by removing the fastening screws on the sides.

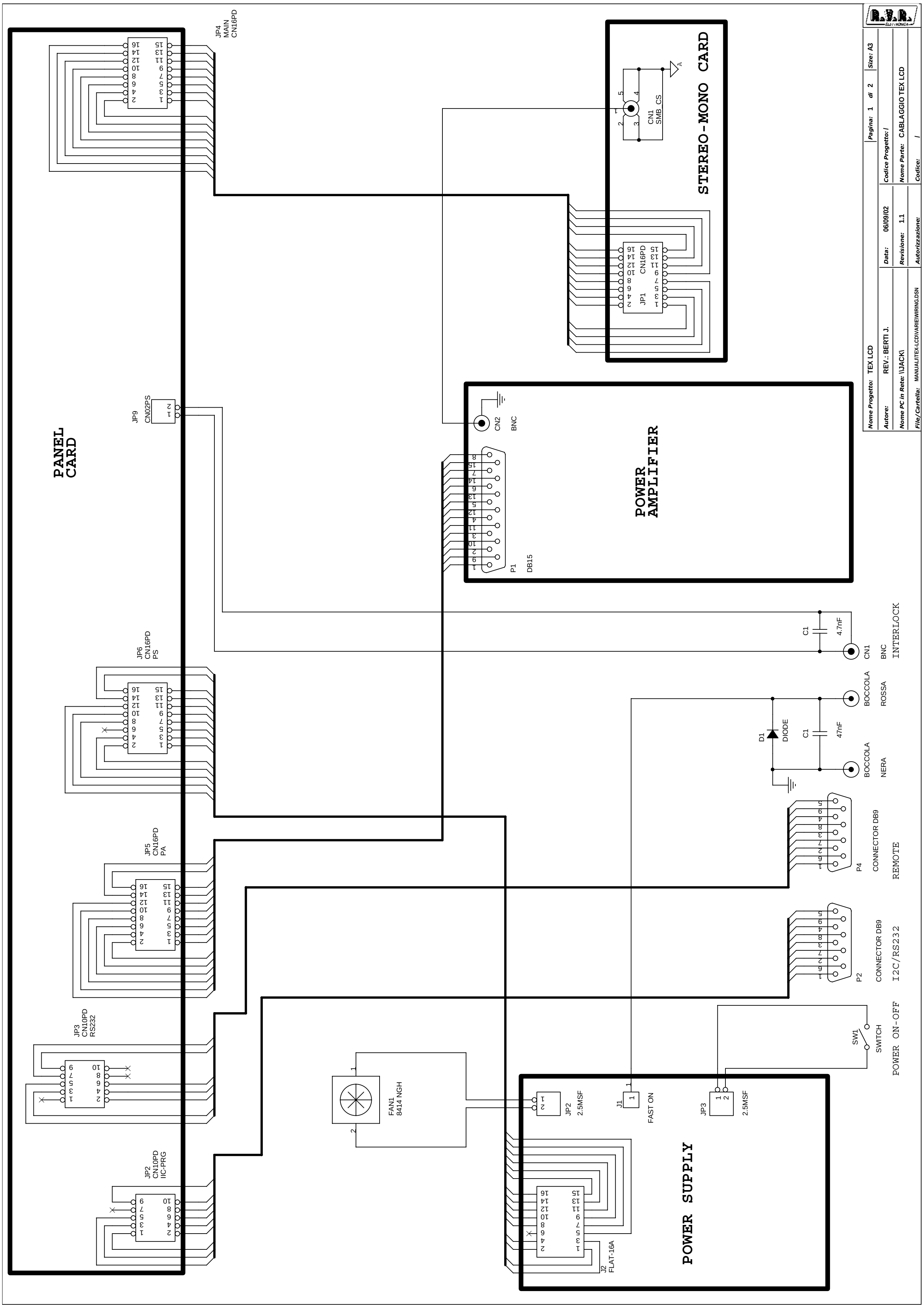
Appendix A Piani di montaggio, schemi elettrici, liste componenti / *Component layouts, schematics, bills of material*

Questa parte del manuale contiene i dettagli tecnici riguardanti la costruzione delle singole schede componenti il TEX LCD. L'appendice è composta dalle seguenti sezioni:

This part of the manual contains the technical details about the different boards of the TEX LCD. This appendix is composed of the following sections:

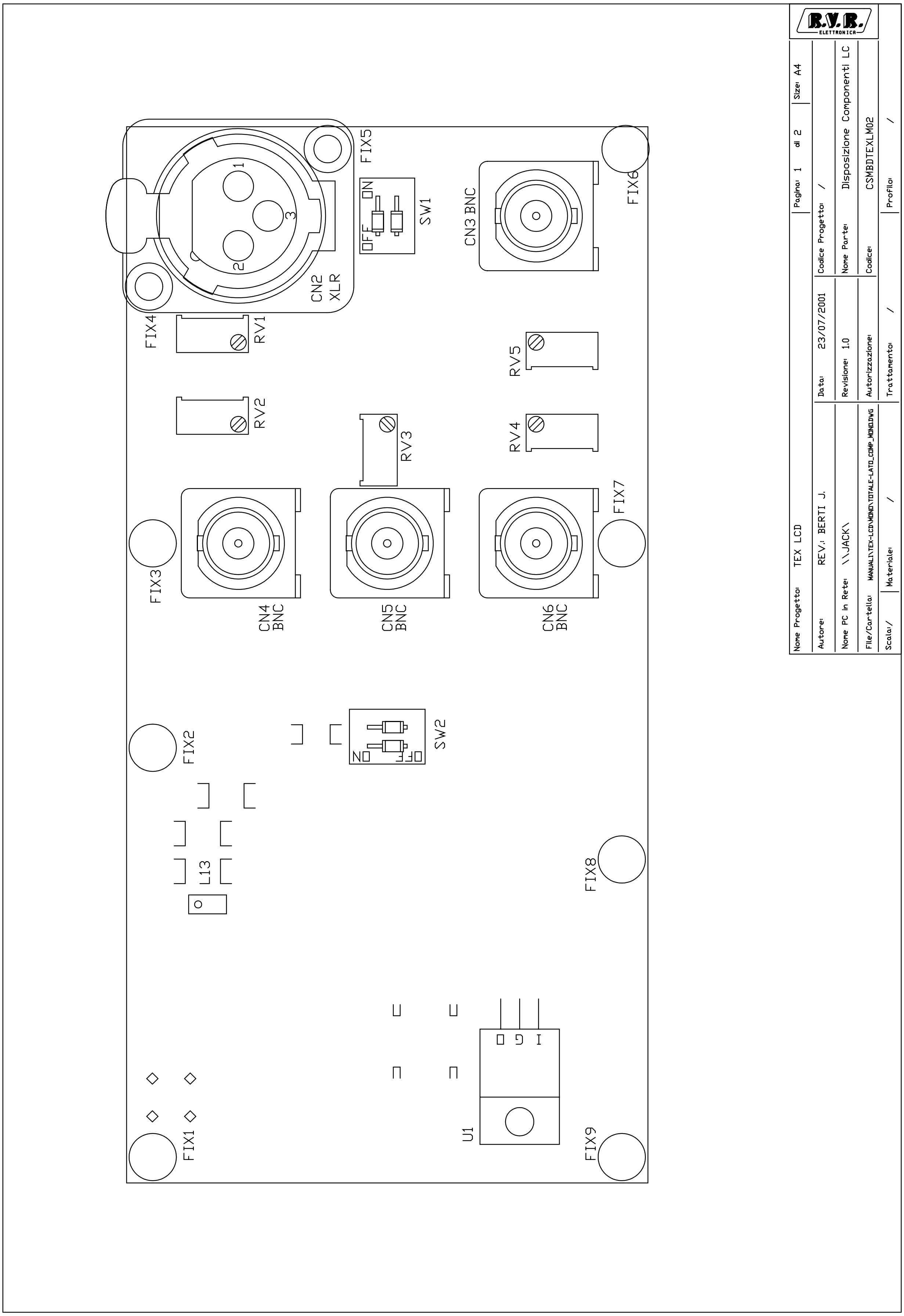
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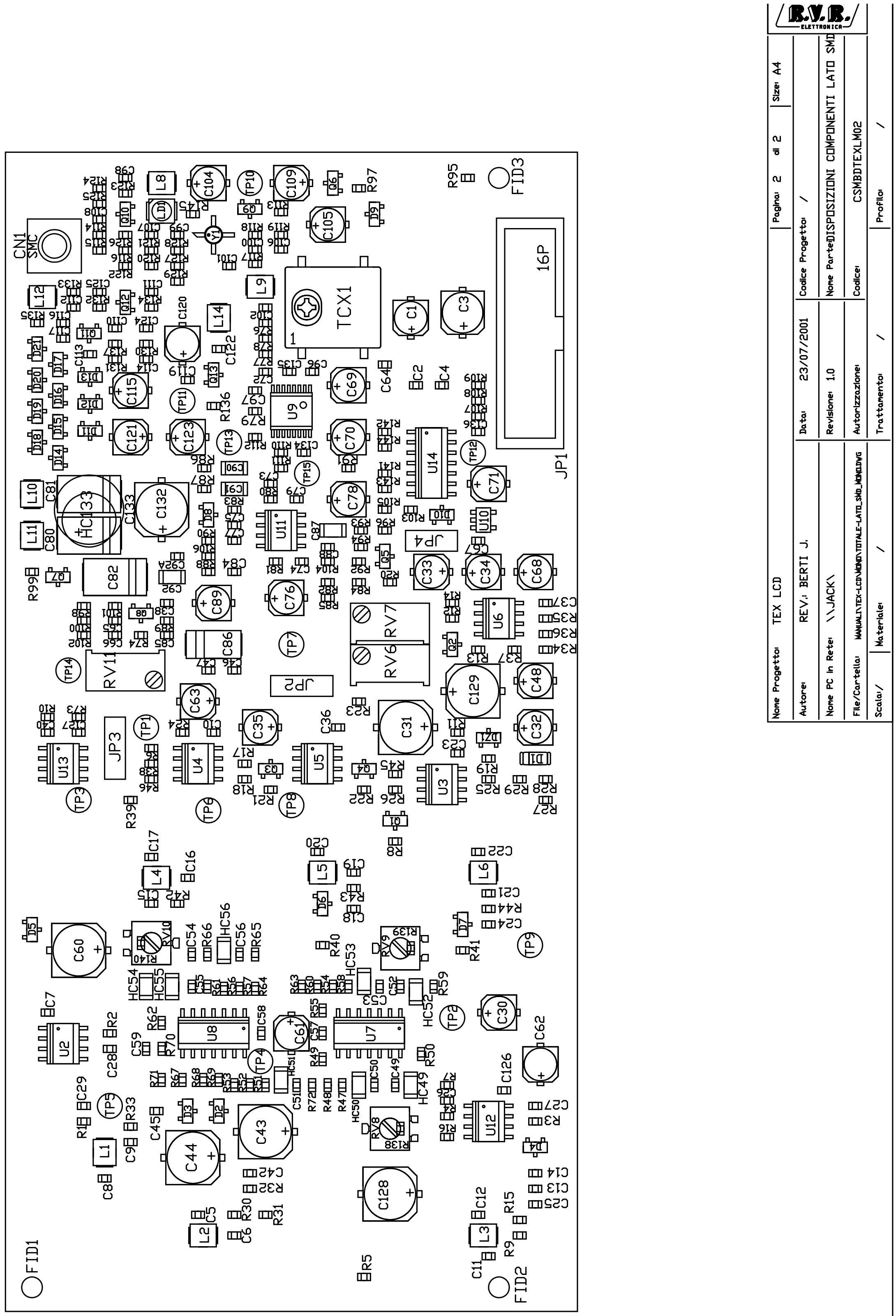

PANEL CARD
STEREO/MONO CARD
POWER AMPLIFIER
TELEMETRY CARD
POWER SUPPLY
JP4 MAIN CN16PD
JP5 CN16PD PA
JP5 CN16PD IIC
JP3 CN10PD RS232
JP6 CN16PD PS
JP1 CN16PD
CN1 SMB_CS
CN2 BNC
P1 DB15
CN1 BNC
INTERLOCK
TELEMETRY
BOCCOLA ROSSA
BOCCOLA NERA
D1 DIODE
C1 47nF
P4 CONNECTOR DB9
RS232
SW1 SWITCH
POWER ON-OFF
FAN1 8414 NGH
JP2 2.5MSF
J1 FAST ON
JP3 2.5MSF
J2 FLAT-16A
Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\VARIE\WIRING.DSN
Data: 06/09/02
Revisione: 1.1
Autorizzazione:
Codice Progetto: /
Nome Parte: CABLAGGIO TEX LCD
Codice: /
Pagina: 2 di 2
Size: A3



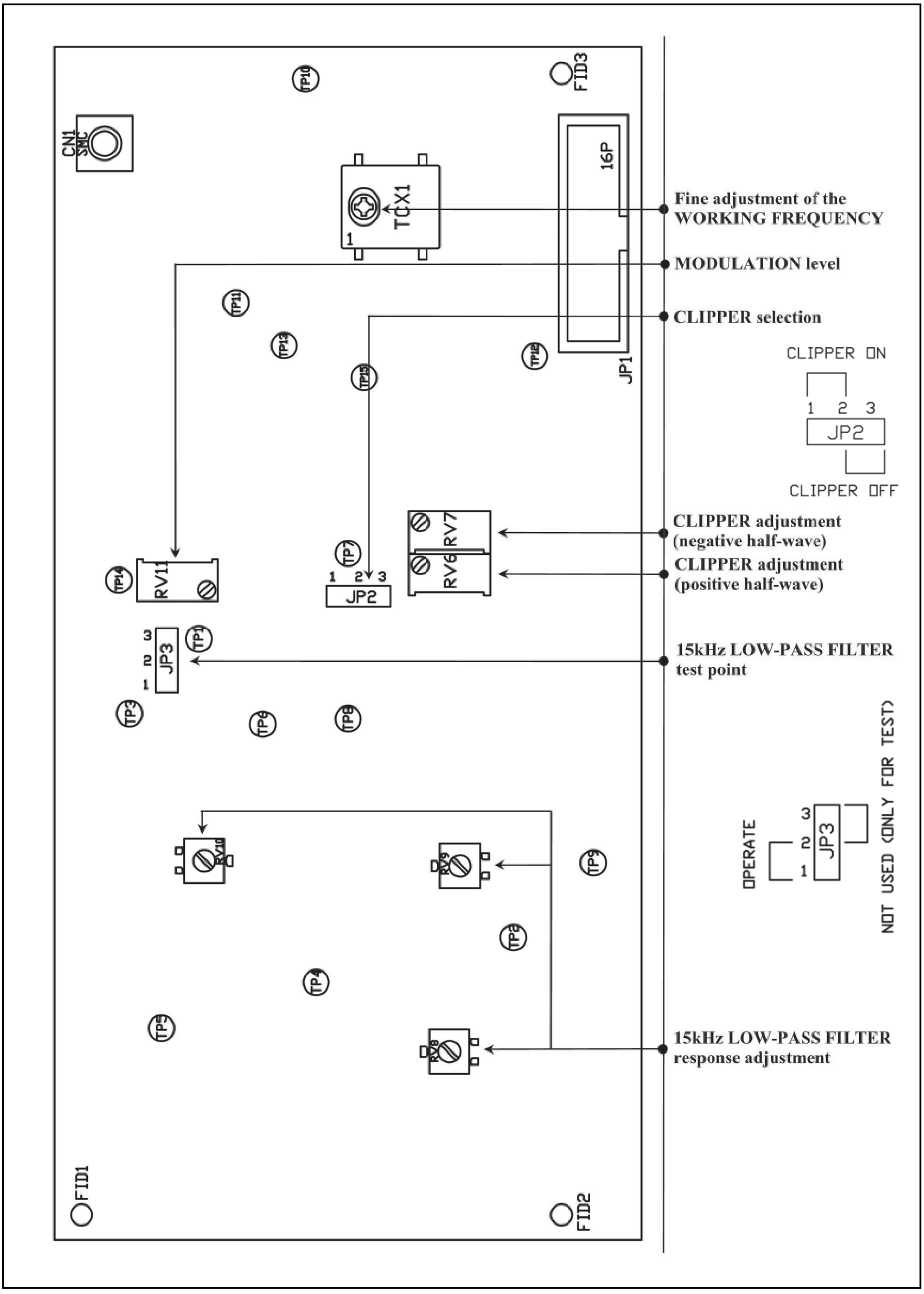
Versione precedente, solo per riferimento

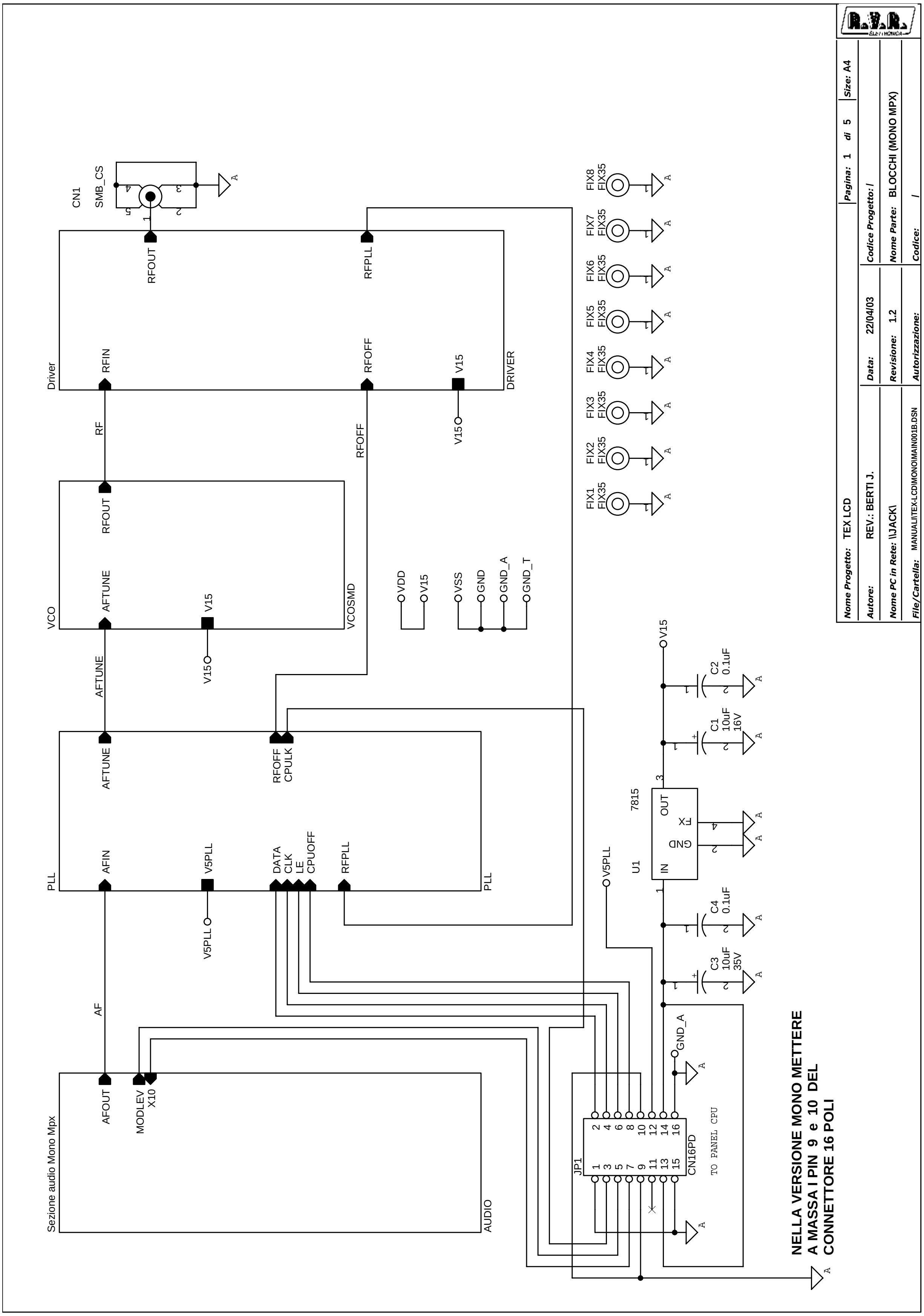
Former version, for reference only

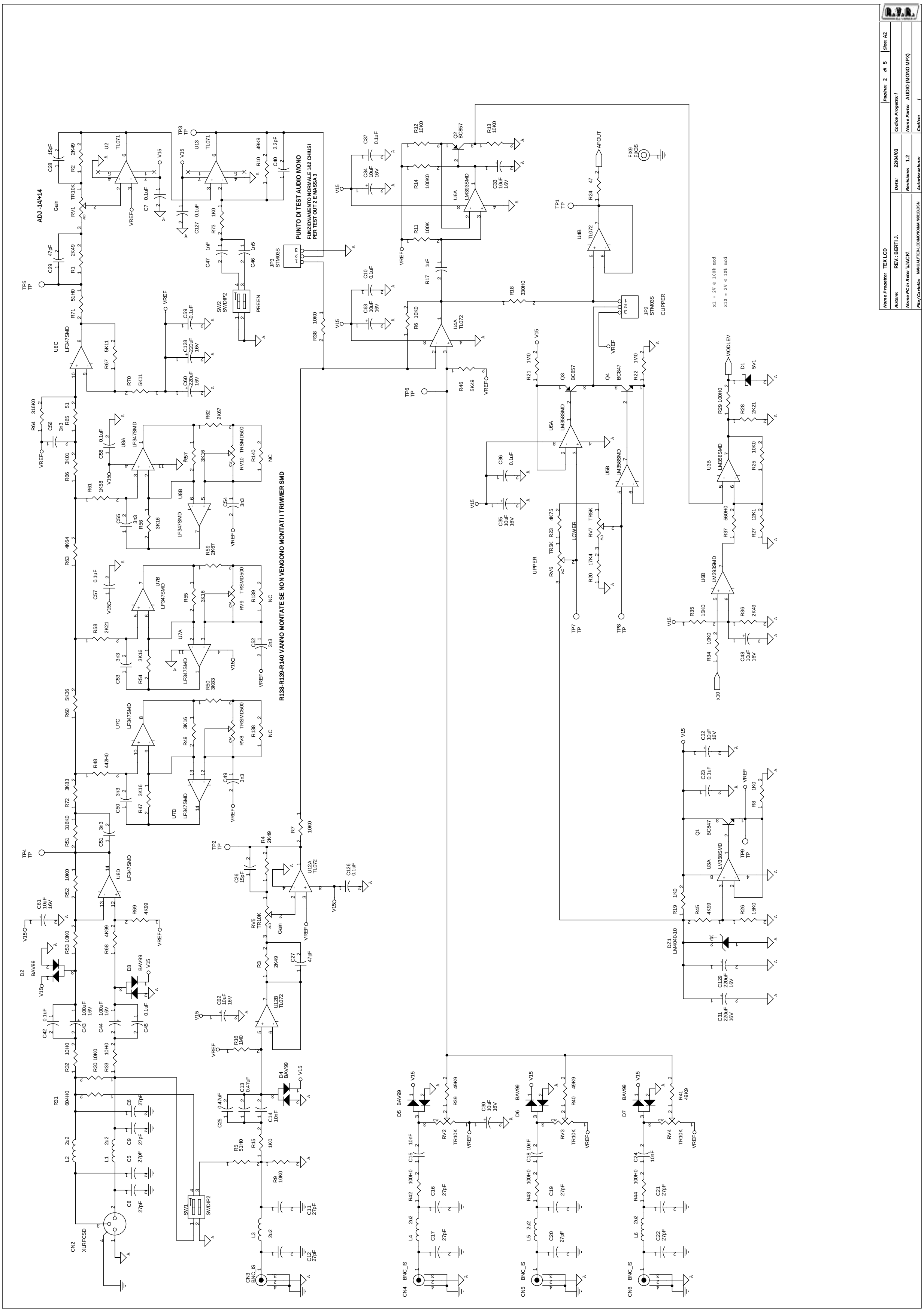

CN2
XLR
FIX5
SW1
OFF ON
CN3 BNC
FIX6
FIX4
RV1
RV2
RV3
RV4
RV5
FIX7
FIX3
CN4
BNC
CN5
BNC
CN6
BNC
SW2
FIX2
L13
FIX8
U1
FIX1
FIX9
Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
Data: 23/07/2001
Revisione: 1.0
Pagina: 1 di 2
Size: A4
Codice Progetto: /
Nome Parte: Disposizione Componenti LC
Codice: CSMBDTEXLM02
Materiale: /
Trattamento: /
Profilo: /

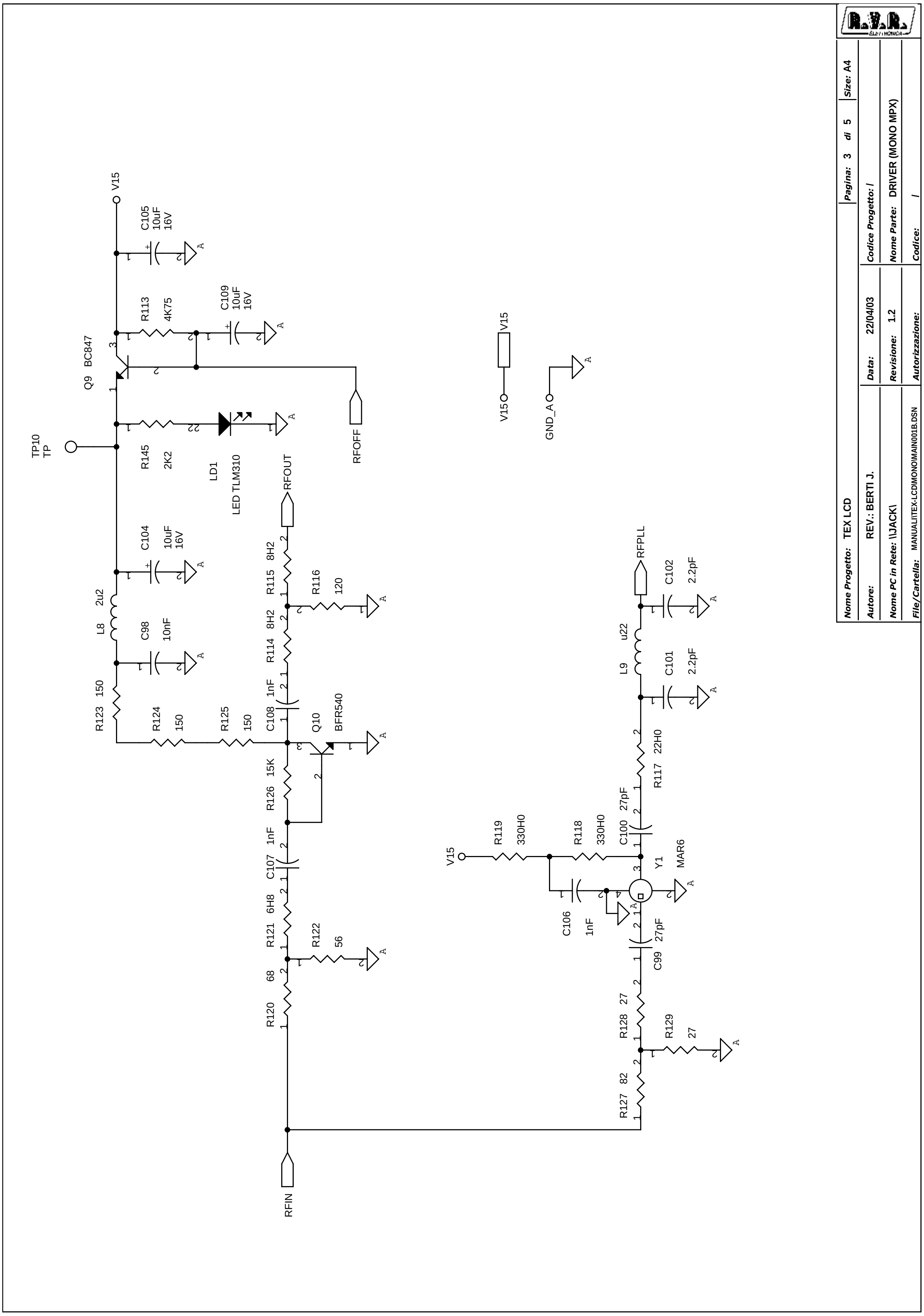


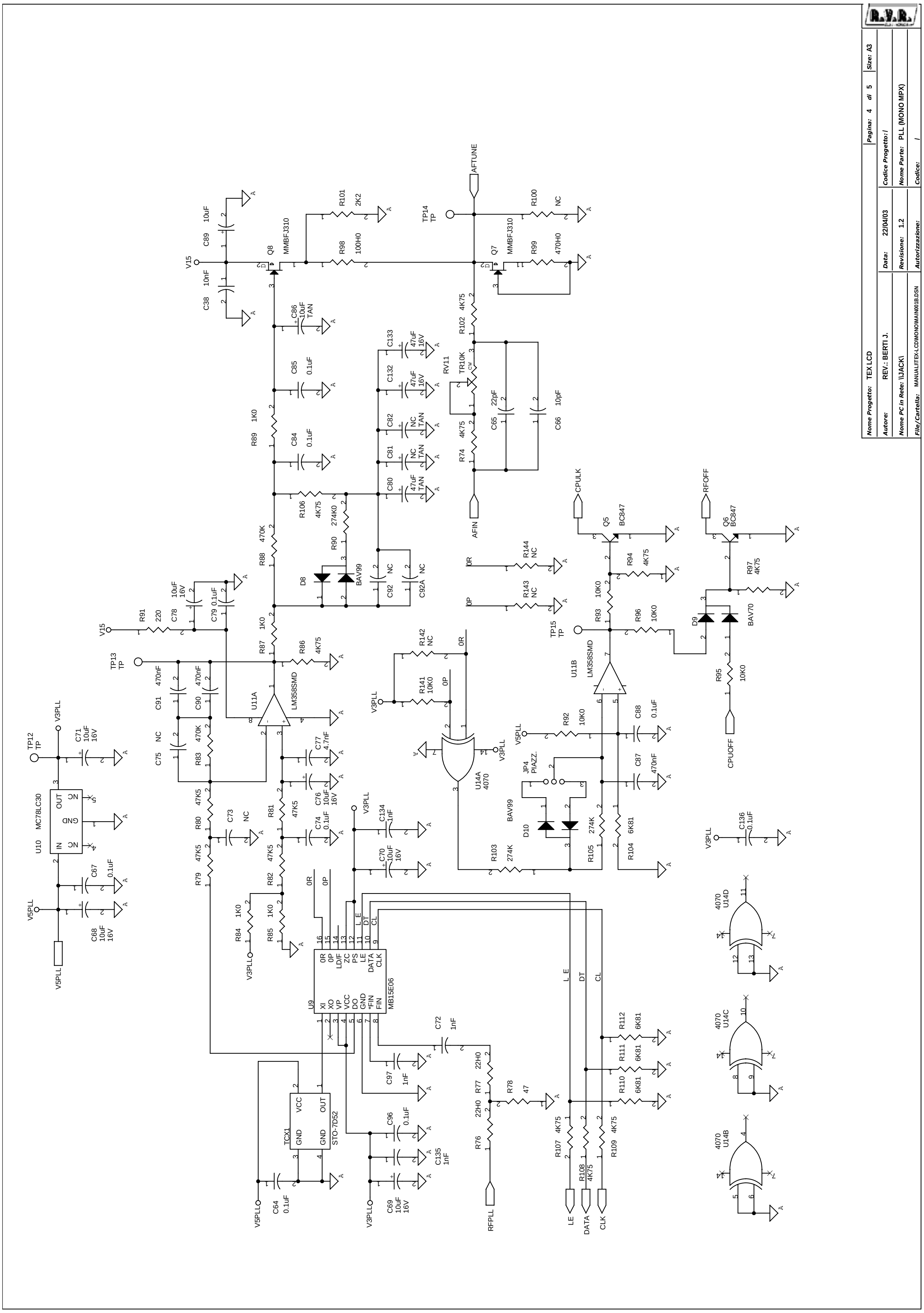
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Autore: REV.: BERTI J.
Data: 23/07/2001
Revisione: 1.0
Nome PC in Rete: \\JACK\
Codice Progetto: /
Nome Parte: DISPOSIZIONI COMPONENTI LATO SMD
Codice: CSMBDTEXLM02
Pagina: 2 di 2
Size: A4
Scala: /
Materiale: /
Trattamento: /
Profilo: /
TCX1
16P
JP1

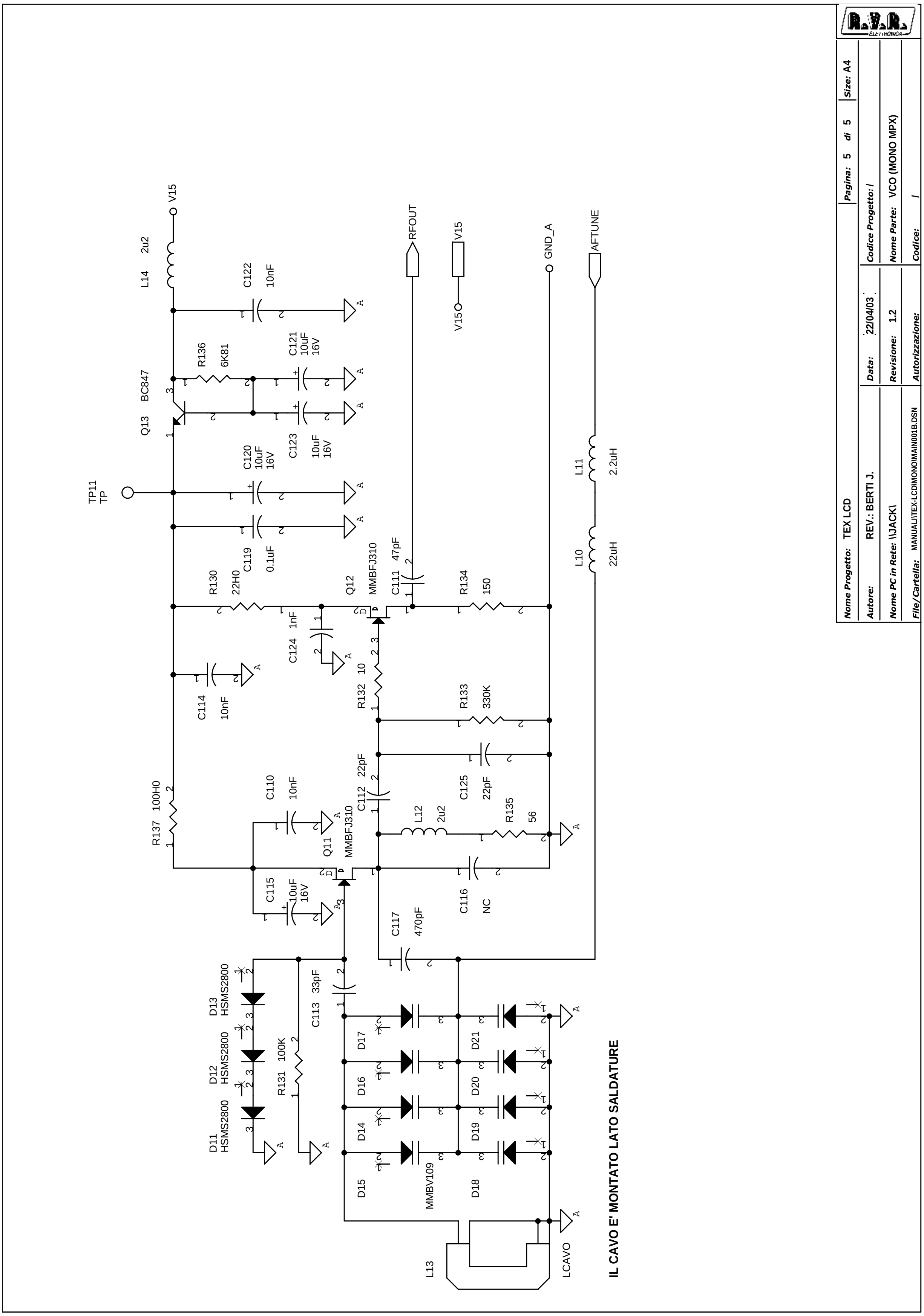

FID3
TP10
CN1 SMC
16P
TCX1
1
Fine adjustment of the WORKING FREQUENCY
MODULATION level
TP11
CLIPPER selection
TP13
TP12
TP15
JP1
CLIPPER ON
1 2 3
JP2
CLIPPER OFF
RV7
CLIPPER adjustment (negative half-wave)
TP7
RV6
CLIPPER adjustment (positive half-wave)
TP14
RV11
1 2 3
JP2
3
2
1
JP3
TP1
15kHz LOW-PASS FILTER test point
TP3
TP6
TP8
NOT USED (ONLY FOR TEST)
OPERATE
3
2
1
JP3
RV10
RV9
TP9
TP2
TP4
TP5
RV8
15kHz LOW-PASS FILTER response adjustment
FID1
FID2


Driver
RFIN
RFOFF
V15
DRIVER
RFOUT
RFPLL
CN1
SMB_CS
RF
RFOFF
V15
VCO
RFOUT
AFTUNE
V15
VCOSMD
AFTUNE
PLL
AFTUNE
RFOFF
CPULK
AFIN
V5PLL
DATA
CLK
LE
CPUOFF
RFPLL
PLL
AF
Sezione audio Mono Mpx
AFOUT
MODLEV
X10
AUDIO
VDD
V15
VSS
GND
GND_A
GND_T
FIX1
FIX2
FIX3
FIX4
FIX5
FIX6
FIX7
FIX8
FIX35
V15
C2
0.1uF
C1
10uF
16V
U1
7815
IN
GND
FX
OUT
V5PLL
C4
0.1uF
C3
10uF
35V
GND_A
JP1
CN16PD
TO PANEL CPU
NELLA VERSIONE MONO METTERE
A MASSA I PIN 9 e 10 DEL
CONNETTORE 16 POLI
Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\MONO\MAIN001B.DSN
Data: 22/04/03
Revisione: 1.2
Autorizzazione:
Codice Progetto: /
Nome Parte: BLOCCHI (MONO MPX)
Codice: /
Pagina: 1 di 5
Size: A4


ADJ -14/+14
PUNTO DI TEST AUDIO MONO
FUNZIONAMENTO NORMALE 1&2 CHIUSI
PER TEST OUT 2 E MASSA 3
R138-R139-R140 VANNO MONTATE SE NON VENGONO MONTATI I TRIMMER SMD
CLIPPER
UPPER
LOWER
MODLEV
AFOUT
AUDIO (MONO MPX)


Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\MONO\MAIN001B.DSN
Data: 22/04/03
Revisione: 1.2
Autorizzazione:
Codice Progetto: /
Nome Parte: DRIVER (MONO MPX)
Codice: /
Pagina: 3 di 5
Size: A4
V15
C105 10uF 16V
R113 4K75
C109 10uF 16V
Q9 BC847
R145 2K2
LD1 LED TLM310
TP10 TP
RFOFF
RFOUT
C104 10uF 16V
L8 2u2
C98 10nF
R123 150
R124 150
R125 150
R115 8H2
R116 120
R114 8H2
C108 1nF
Q10 BFR540
R126 15K
C107 1nF
R121 6H8
R122 56
R120 68
RFIN
GND_A
RFPLL
C102 2.2pF
L9 u22
C101 2.2pF
R117 22H0
C100 27pF
R119 330H0
R118 330H0
Y1 MAR6
C106 1nF
C99 27pF
R128 27
R129 27
R127 82


Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Data: 22/04/03
Revisione: 1.2
Nome Parte: PLL (MONO MPX)
Codice Progetto: /
Codice: /
Pagina: 4 di 5
Size: A3


Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\MONO\MAIN001B.DSN
Data: 22/04/03
Revisione: 1.2
Autorizzazione:
Codice Progetto: /
Nome Parte: VCO (MONO MPX)
Codice: /
Pagina: 5 di 5
Size: A4
IL CAVO E' MONTATO LATO SALDATURE
RFOUT
V15
GND_A
AFTUNE
TP11
TP
LCAVO
L13

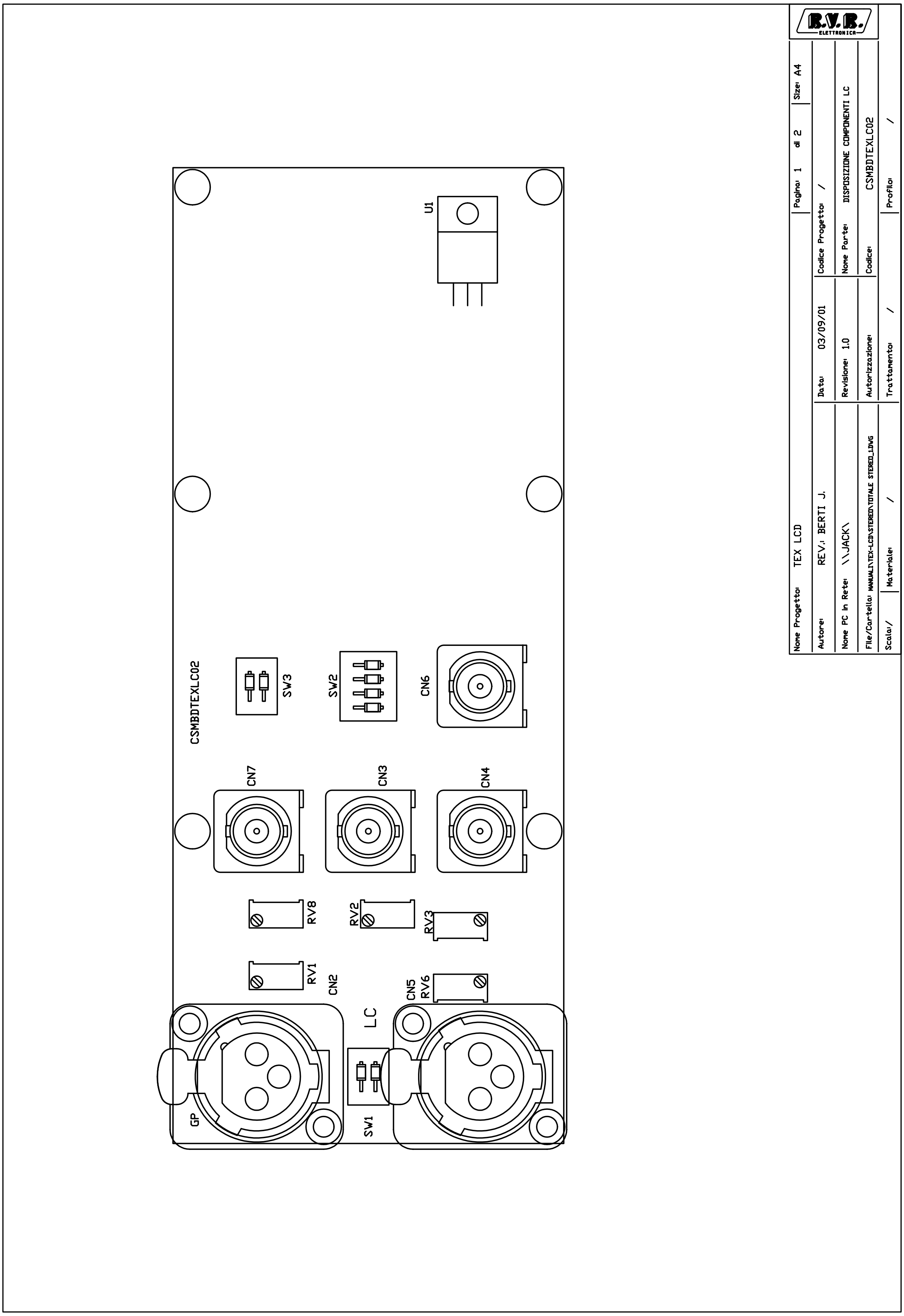
CSMBDTEXLM02 Bill Of Materials Page1

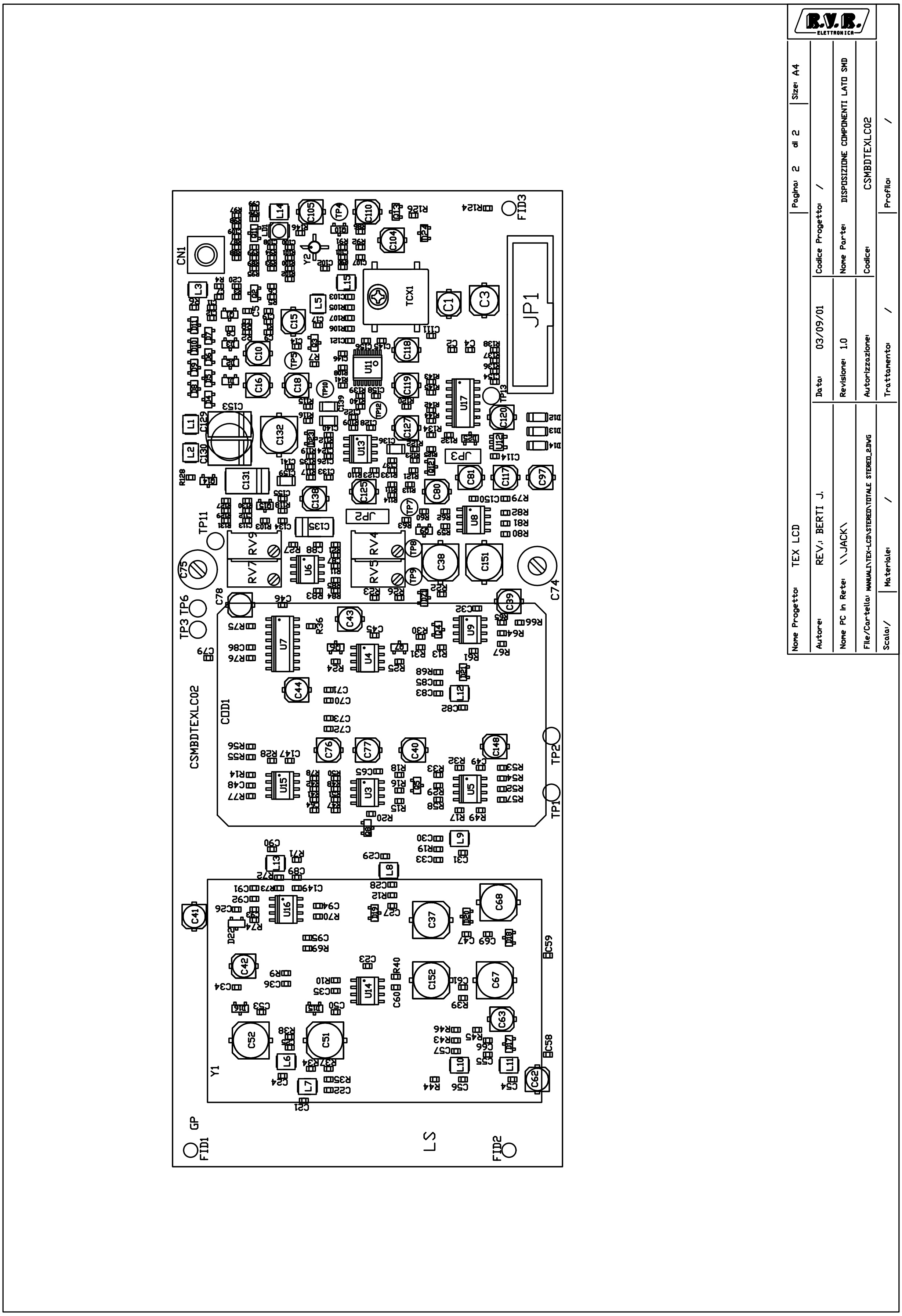
Item	Q.ty	Reference	Part
1	1	CN1	SMB_CS
2	1	CN2	XLRFCSD
3	4	CN3,CN4,CN5,CN6	BNC_IS
4	26	C1,C3,C30,C32,C33,C34, C35,C48,C61,C62,C63,C68, C69,C70,C71,C76,C78,C86, C89,C104,C105,C109,C115, C120,C121,C123	10uF
5	24	C2,C4,C7,C10,C23,C36,C37, C42,C45,C57,C58,C59,C64, C67,C74,C79,C84,C85,C88, C96,C119,C126,C127,C136	0.1uF
6	14	C5,C6,C8,C9,C11,C12,C16, C17,C19,C20,C21,C22,C99, C100	27pF
7	2	C13,C25	0.47uF
8	9	C14,C15,C18,C24,C38,C98, C110,C114,C122	10nF
9	2	C28,C26	15pF
10	3	C27,C29,C111	47pF
11	4	C31,C60,C128,C129	220uF
12	3	C40,C101,C102	2.2pF
13	2	C43,C44	100uF
14	1	C46	1n5
15	9	C47,C72,C97,C106,C107, C108,C124,C134,C135	1nF
16	8	C49,C50,C51,C52,C53,C54, C55,C56	3n3
17	3	C65,C112,C125	22pF
18	1	C66	10pF
19	14	C73,C75,C81,C82,C92A,C92, R100,C116,R138,R139,R140, R142,R143,R144	NC
20	1	C77	4.7nF
21	3	C80,C132,C133	47uF
22	3	C87,C90,C91	470nF
23	1	C113	33pF
24	1	C117	470pF
25	1	DZ1	LM4040-10
26	1	D1	5V1
27	8	D2,D3,D4,D5,D6,D7,D8,D10	BAV99
28	1	D9	BAV70
29	3	D11,D12,D13	HSMS2800
30	8	D14,D15,D16,D17,D18,D19, D20,D21	MMBV109
31	9	FIX1,FIX2,FIX3,FIX4,FIX5, FIX6,FIX7,FIX8,FIX9	FIX35
32	1	JP1	CN16PD
33	2	JP3,JP2	STM03S
34	1	JP4	PIAZZ.
35	1	LD1	LED TLM310
36	9	L1,L2,L3,L4,L5,L6,L8,L12, L14	2u2
37	1	L9	u22

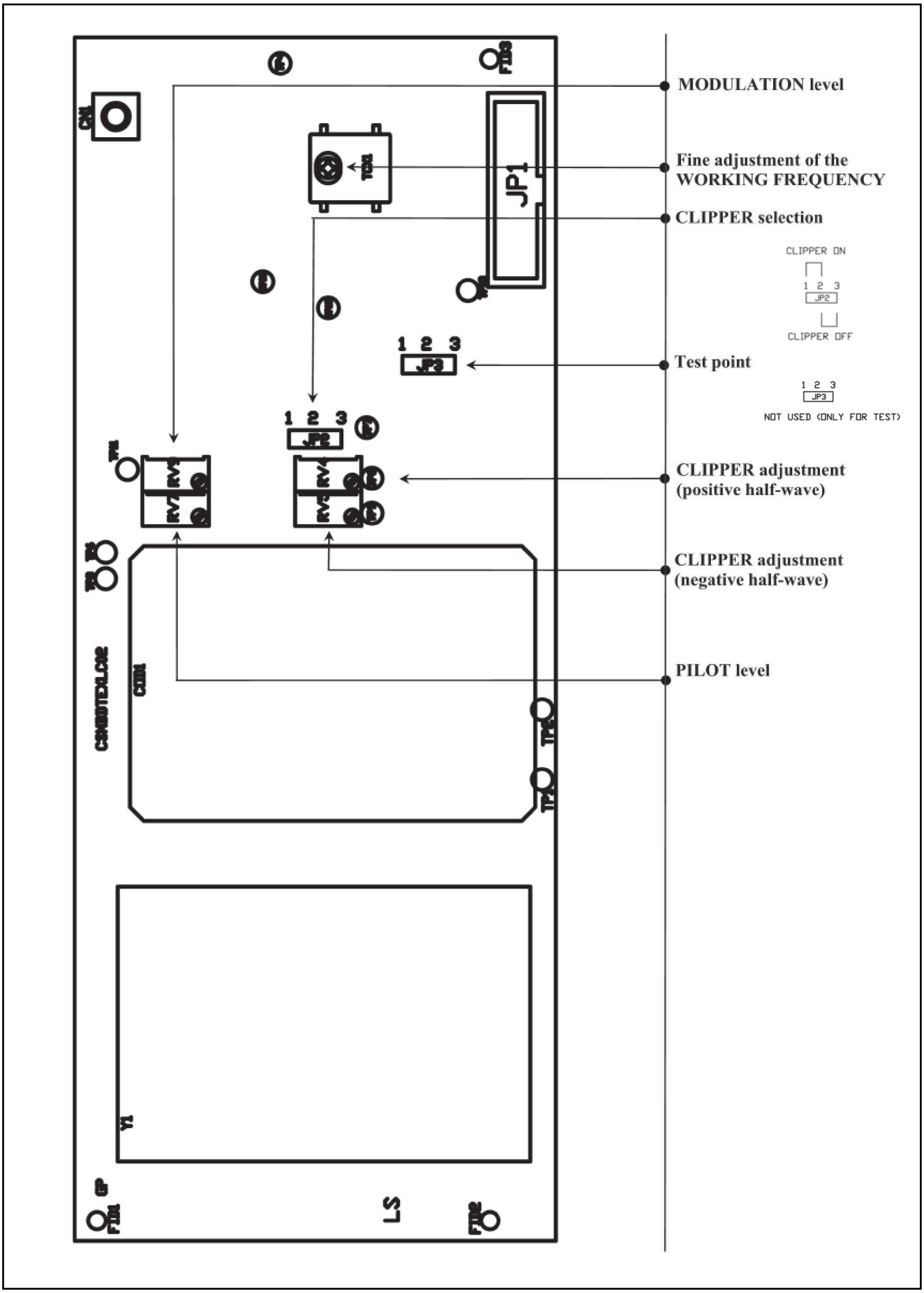
38	1	L10	22uH
39	1	L11	2.2uH
40	1	L13	LCAVO
41	6	Q1,Q4,Q5,Q6,Q9,Q13	BC847
42	2	Q3,Q2	BC857
43	4	Q7,Q8,Q11,Q12	MMBFJ310
44	1	Q10	BFR540
45	6	RV1,RV2,RV3,RV4,RV5,RV11	TR10K
46	2	RV6,RV7	TR5K
47	3	RV8,RV9,RV10	TRSMD500
48	5	R1,R2,R3,R4,R36	2K49
49	2	R5,R71	51H0
50	16	R6,R7,R9,R12,R13,R25,R30, R34,R38,R52,R53,R92,R93, R95,R96,R141	10K0
51	8	R8,R15,R19,R73,R84,R85, R87,R89	1K0
52	4	R10,R39,R40,R41	49K9
53	2	R11,R131	100K
54	1	R14	100K0
55	1	R17	1uF
56	3	R18,R118,R119	330H0
57	1	R20	17K4
58	3	R16,R22,R21	1M0
59	11	R23,R74,R86,R94,R97,R102, R106,R107,R108,R109,R113	4K75
60	2	R24,R78	47
61	2	R26,R35	15K0
62	1	R27	12K1
63	2	R28,R58	2K21
64	6	R29,R42,R43,R44,R98,R137	100H0
65	1	R31	604H0
66	2	R32,R33	10H0
67	1	R37	560H0
68	3	R45,R68,R69	4K99
69	1	R46	5K49
70	6	R47,R49,R54,R55,R56,R57	3K16
71	1	R48	442H0
72	2	R50,R72	3K83
73	2	R51,R64	316K0
74	2	R59,R62	2K67
75	1	R60	5K36
76	1	R61	1K58
77	1	R63	4K64
78	1	R65	51
79	1	R66	3K01
80	2	R67,R70	5K11
81	4	R76,R77,R117,R130	22H0
82	4	R79,R80,R81,R82	47K5
83	2	R83,R88	470K
84	1	R90	274K0
85	1	R91	220
86	1	R99	470H0
87	2	R145,R101	2K2
88	2	R103,R105	274K
89	5	R104,R110,R111,R112,R136	6K81
90	2	R114,R115	8H2
91	1	R116	120
92	1	R120	68

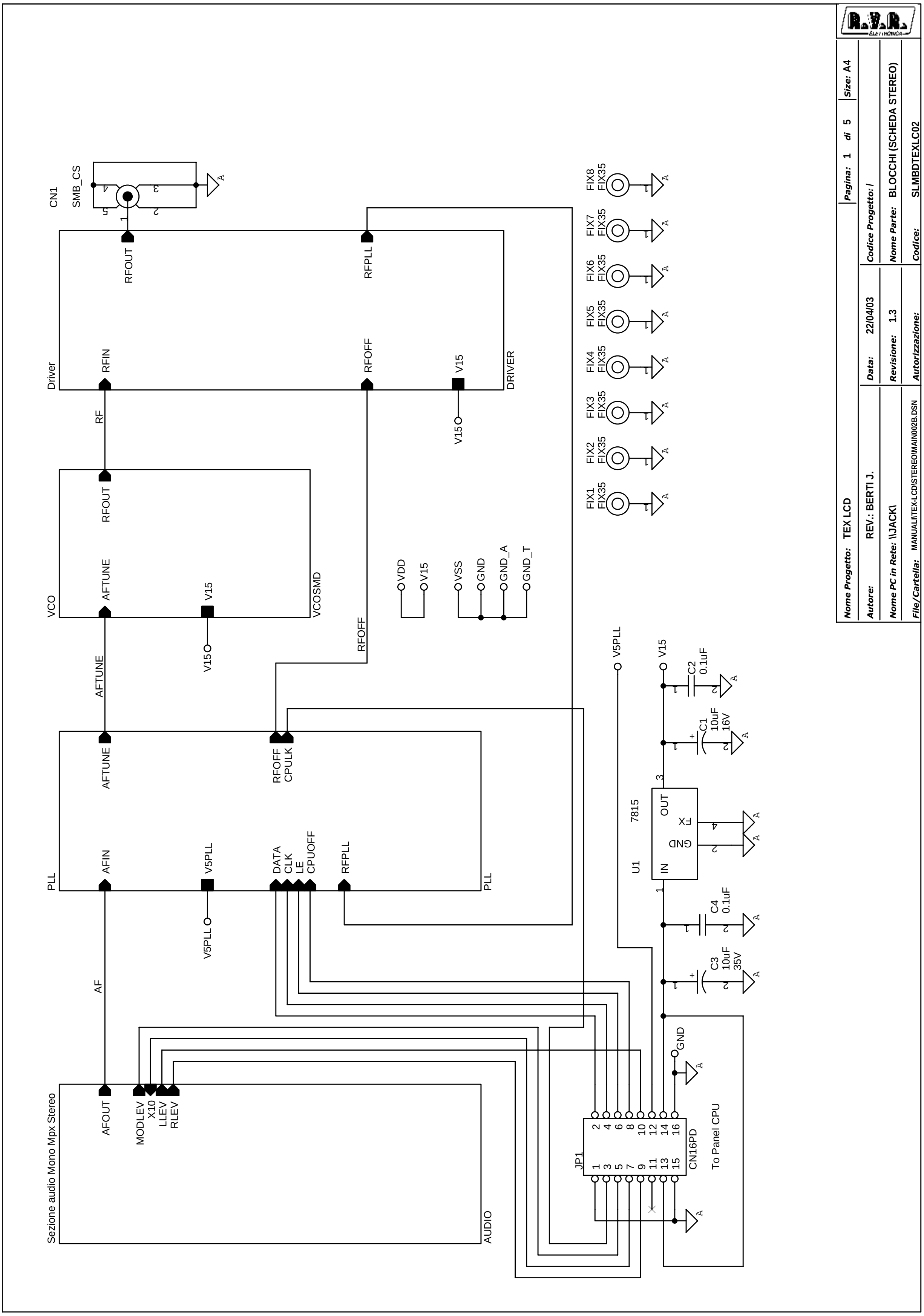
93	1	R121	6H8
94	2	R122,R135	56
95	4	R123,R124,R125,R134	150
96	1	R126	15K
97	1	R127	82
98	2	R129,R128	27
99	1	R132	10
100	1	R133	330K
101	2	SW1,SW2	SWDIP2
102	1	TCX1	STO-7D52
103	15	TP1,TP2,TP3,TP4,TP5,TP6, TP7,TP8,TP9,TP10,TP11, TP12,TP13,TP14,TP15	TP
104	1	U1	7815
105	2	U2,U13	TL071
106	3	U3,U5,U11	LM358SMD
107	2	U12,U4	TL072
108	1	U6	LM393SMD
109	2	U8,U7	LF347SMD
110	1	U9	MB15E06
111	1	U10	MC78LC30
112	1	U14	4070
113	1	Y1	MAR6

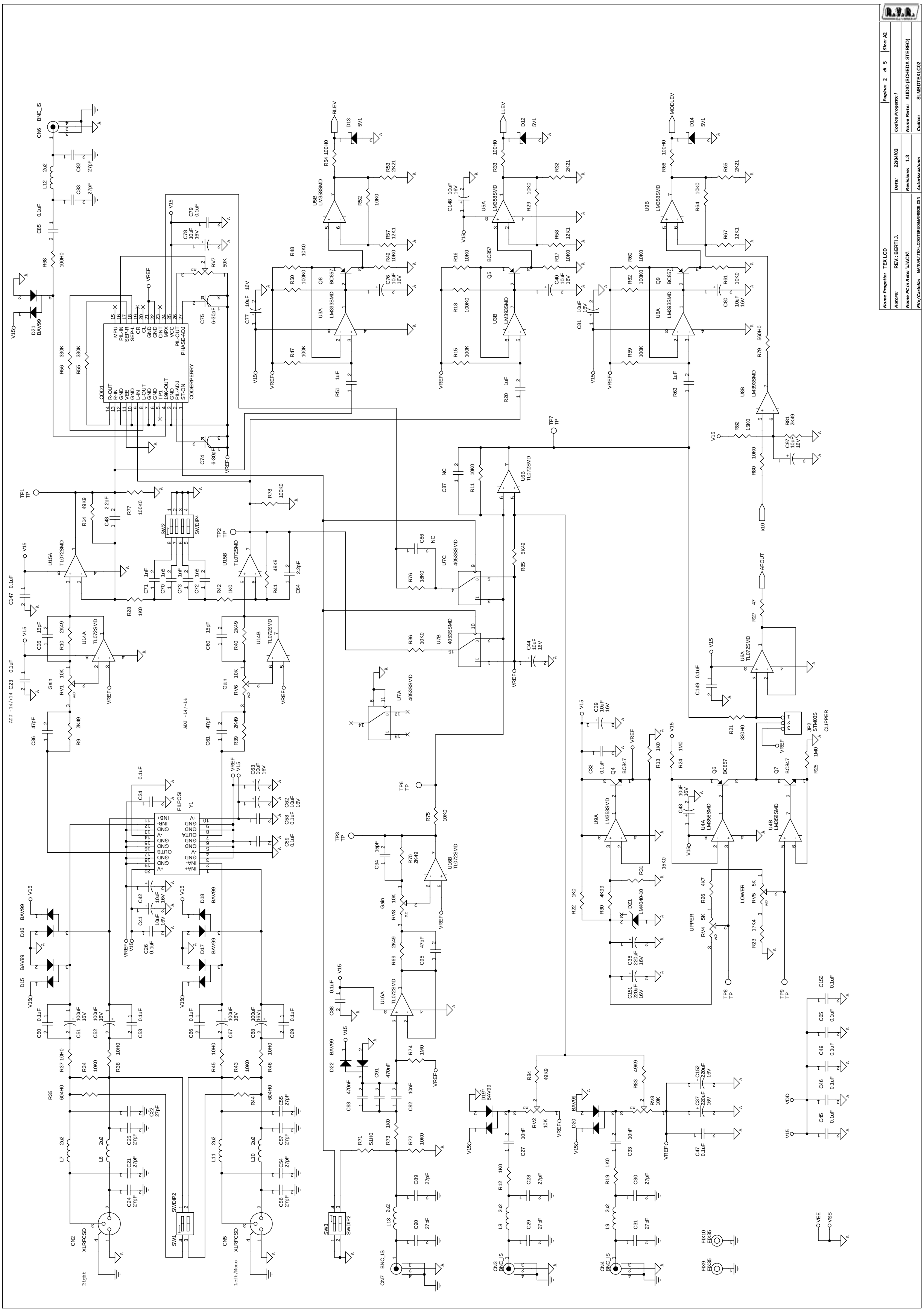
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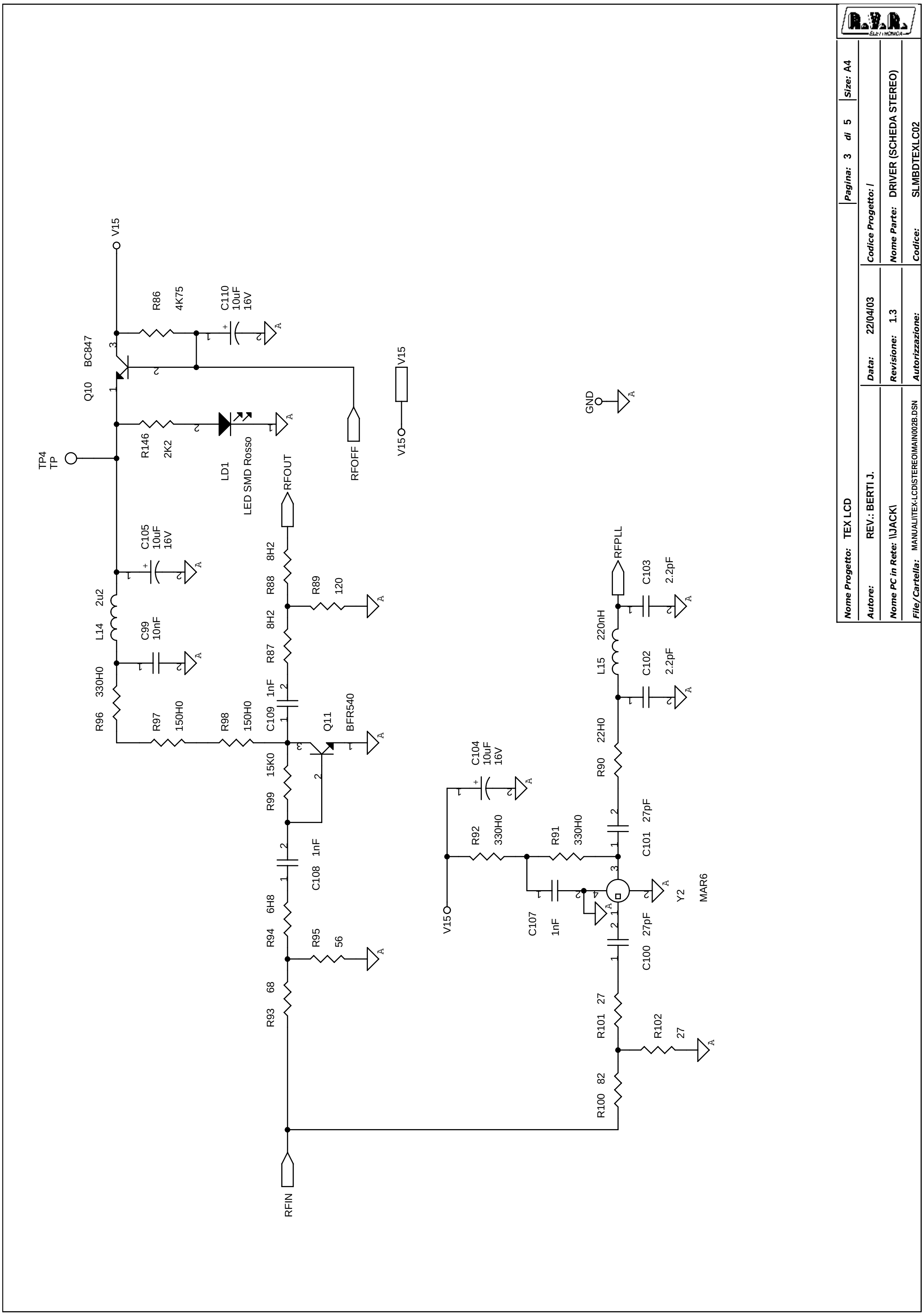

Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Data: 03/09/01
Revisione: 1.0
Codice Progetto: /
Nome Parte: DISPOSIZIONE COMPONENTI LC
Codice: CSMBDTEXLC02
Pagina: 1 di 2
Size: A4
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\STEREO\TOTALE STEREO_LDWG
Autorizzazione:
Scala: /
Materiale: /
Trattamento: /
Profilo: /
U1
CSMBDTEXLC02
SW3
SW2
CN6
CN7
CN3
CN4
RV8
RV2
RV3
RV1
CN2
CN5
RV6
LC
GP
SW1

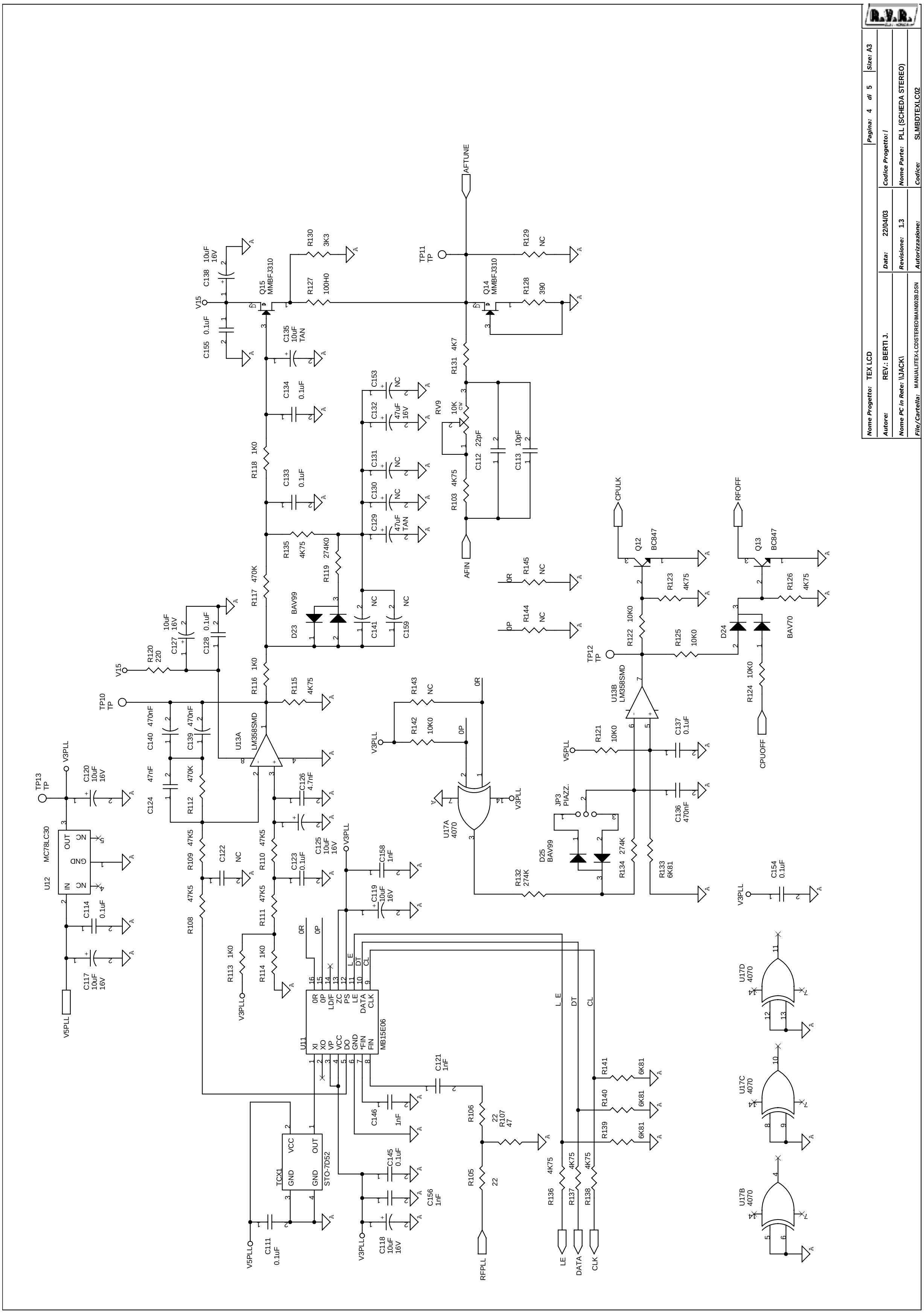

Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Data: 03/09/01
Revisione: 1.0
Codice Progetto: /
Nome Parte: DISPOSIZIONE COMPONENTI LATO SMD
Codice: CSMBDTEXLC02
Pagina: 2 di 2
Size: A4
CSMBDTEXLC02

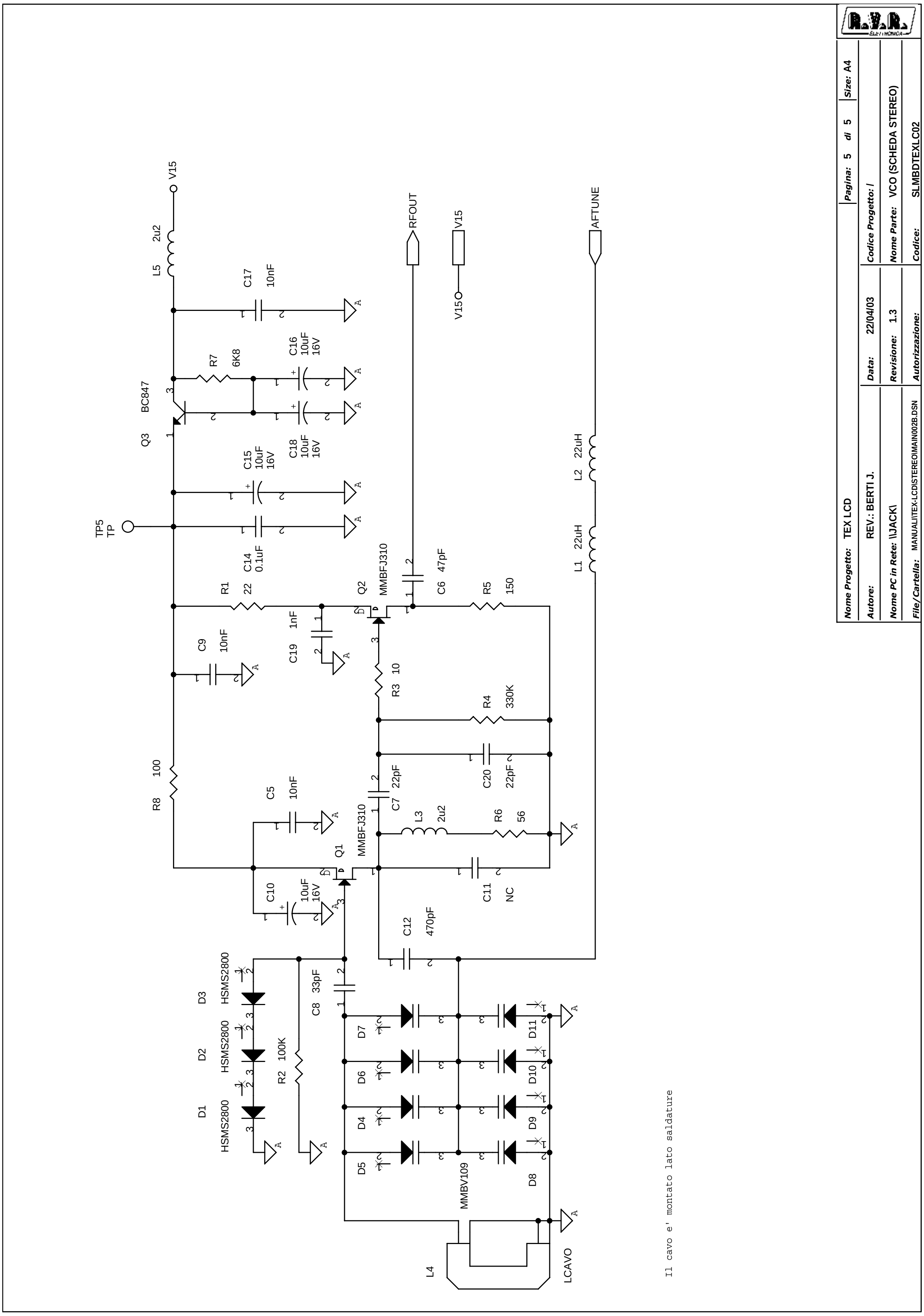

MODULATION level
Fine adjustment of the WORKING FREQUENCY
CLIPPER selection
CLIPPER ON
1 2 3
JP2
CLIPPER OFF
Test point
1 2 3
JP3
NOT USED (ONLY FOR TEST)
CLIPPER adjustment (positive half-wave)
CLIPPER adjustment (negative half-wave)
PILOT level
JP1
RV4
RV5
RV6
RV7
CSMBDTEXLC02
Y1
LS


Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\STEREO\MAIN002B.DSN
Data: 22/04/03
Revisione: 1.3
Autorizzazione:
Codice Progetto: /
Nome Parte: BLOCCHI (SCHEDA STEREO)
Codice: SLMBDTEXLC02
Pagina: 1 di 5
Size: A4
CN1
SMB_CS
Driver
DRIVER
RFOUT
RFPLL
RFIN
RFOFF
V15
RF
VCO
VCOSMD
AFTUNE
PLL
AFIN
V5PLL
DATA
CLK
LE
CPUOFF
CPULK
AF
Sezione audio Mono Mpx Stereo
AUDIO
AFOUT
MODLEV
X10
LLEV
RLEV
VDD
VSS
GND
GND_A
GND_T
FIX1
FIX2
FIX3
FIX4
FIX5
FIX6
FIX7
FIX8
FIX35
U1
7815
IN
OUT
GND
FX
C1
10uF
16V
C2
0.1uF
C3
10uF
35V
C4
0.1uF
JP1
CN16PD
To Panel CPU




Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Data: 22/04/03
Nome PC in Rete: \\JACK\
Revisione: 1.3
File/Cartella: MANUALI\TEX-LCD\STEREO\MAIN002B.DSN
Autorizzazione:
Codice Progetto: /
Pagina: 3 di 5
Size: A4
Nome Parte: DRIVER (SCHEDA STEREO)
Codice: SLMBDTEXLC02
V15
R86
4K75
C110
10uF
16V
Q10
BC847
R146
2K2
LD1
LED SMD Rosso
TP4
TP
RFOUT
RFOFF
GND
C105
10uF
16V
L14
2u2
C99
10nF
R96
330H0
R97
150H0
R98
150H0
R88
8H2
R89
120
R87
8H2
C109
1nF
Q11
BFR540
R99
15K0
C108
1nF
R94
6H8
R95
56
R93
68
RFIN
C104
10uF
16V
R92
330H0
R91
330H0
C107
1nF
RFPLL
C103
2.2pF
L15
220nH
C102
2.2pF
R90
22H0
C101
27pF
Y2
MAR6
C100
27pF
R101
27
R102
27
R100
82


Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Data: 22/04/03
Revisione: 1.3
Nome Parte: PLL (SCHEDA STEREO)
Codice: SLMBDTEXLC02
Pagina: 4 di 5
Size: A3


Il cavo e' montato lato saldature
Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\STEREO\MAIN0028.DSN
Data: 22/04/03
Revisione: 1.3
Autorizzazione:
Codice Progetto: /
Nome Parte: VCO (SCHEDA STEREO)
Codice: SLMBDTEXLC02
Pagina: 5 di 5
Size: A4

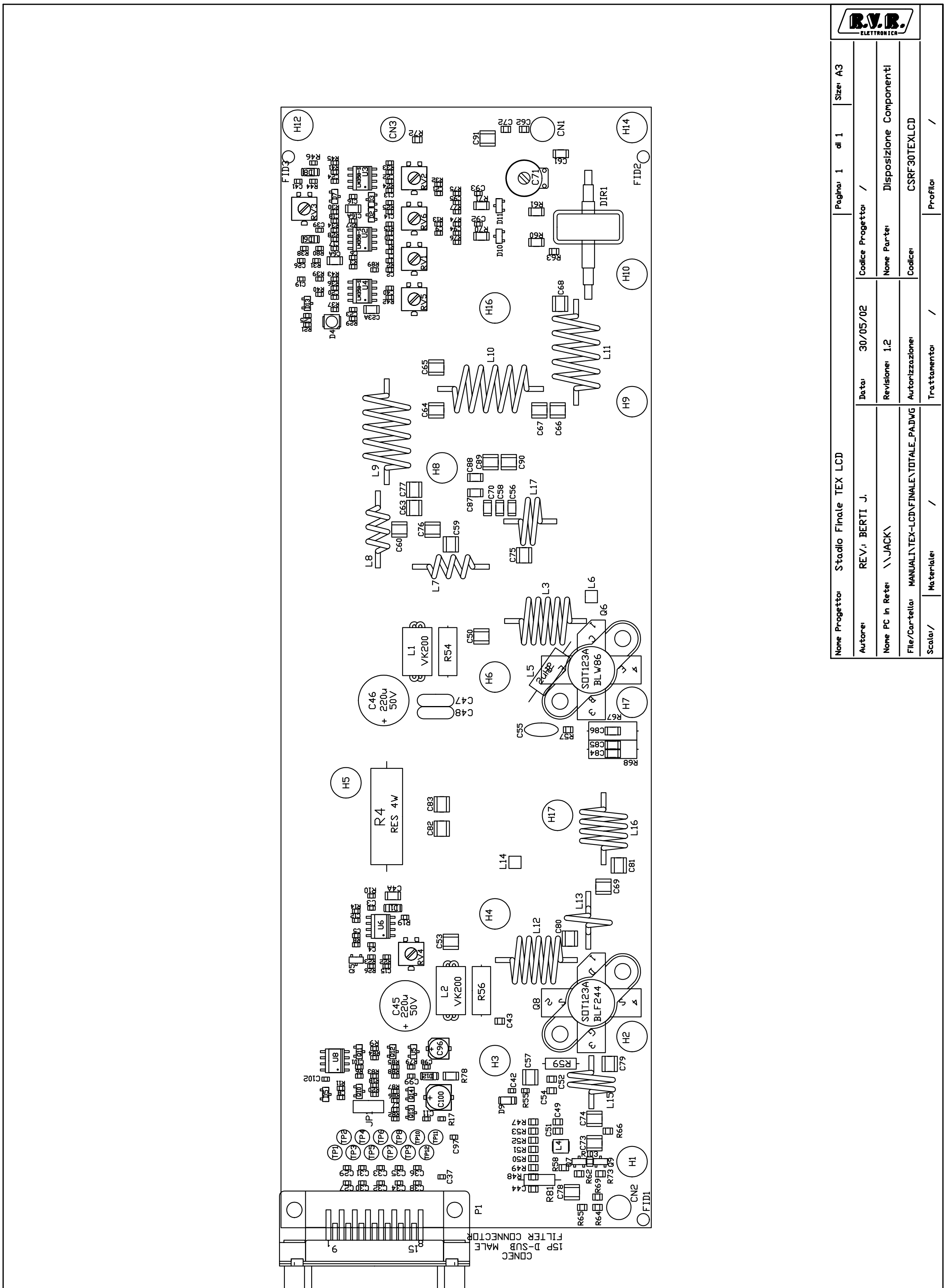
CSMBDTEXLC02 Bill Of Materials Page1

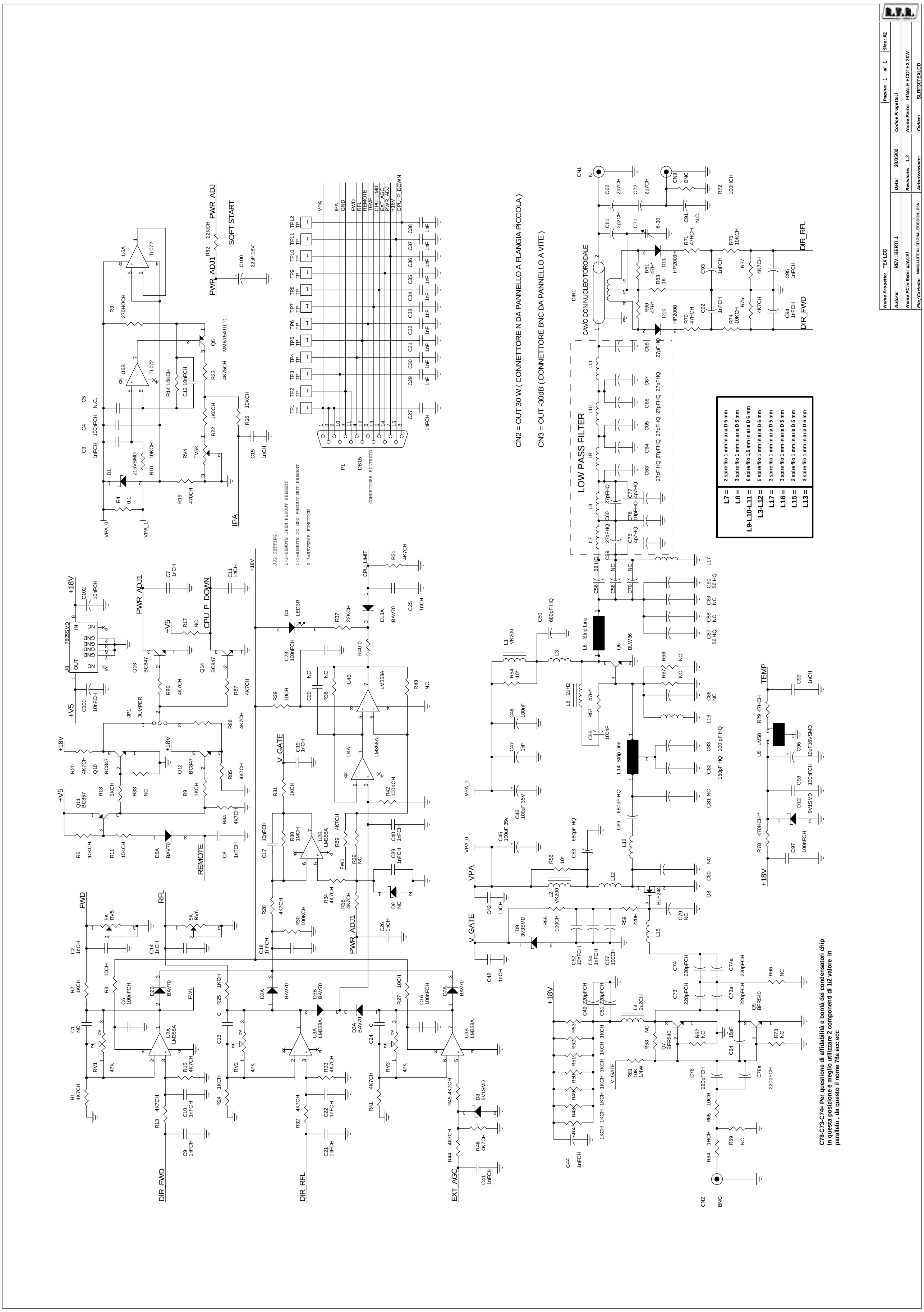
Item	Q.ty	Reference	Part
1	1	CN1	SMB_CS
2	1	CN2	XLRFCSD
3	4	CN3,CN4,CN5,CN6	BNC_IS
4	26	C1,C3,C30,C32,C33,C34, C35,C48,C61,C62,C63,C68, C69,C70,C71,C76,C78,C86, C89,C104,C105,C109,C115, C120,C121,C123	10uF
5	24	C2,C4,C7,C10,C23,C36,C37, C42,C45,C57,C58,C59,C64, C67,C74,C79,C84,C85,C88, C96,C119,C126,C127,C136	0.1uF
6	14	C5,C6,C8,C9,C11,C12,C16, C17,C19,C20,C21,C22,C99, C100	27pF
7	2	C13,C25	0.47uF
8	9	C14,C15,C18,C24,C38,C98, C110,C114,C122	10nF
9	2	C28,C26	15pF
10	3	C27,C29,C111	47pF
11	4	C31,C60,C128,C129	220uF
12	3	C40,C101,C102	2.2pF
13	2	C43,C44	100uF
14	1	C46	1n5
15	9	C47,C72,C97,C106,C107, C108,C124,C134,C135	1nF
16	8	C49,C50,C51,C52,C53,C54, C55,C56	3n3
17	3	C65,C112,C125	22pF
18	1	C66	10pF
19	14	C73,C75,C81,C82,C92A,C92, R100,C116,R138,R139,R140, R142,R143,R144	NC
20	1	C77	4.7nF
21	3	C80,C132,C133	47uF
22	3	C87,C90,C91	470nF
23	1	C113	33pF
24	1	C117	470pF
25	1	DZ1	LM4040-10
26	1	D1	5V1
27	8	D2,D3,D4,D5,D6,D7,D8,D10	BAV99
28	1	D9	BAV70
29	3	D11,D12,D13	HSMS2800
30	8	D14,D15,D16,D17,D18,D19, D20,D21	MMBV109
31	9	FIX1,FIX2,FIX3,FIX4,FIX5, FIX6,FIX7,FIX8,FIX9	FIX35
32	1	JP1	CN16PD
33	2	JP3,JP2	STM03S
34	1	JP4	PIAZZ.
35	1	LD1	LED TLM310
36	9	L1,L2,L3,L4,L5,L6,L8,L12, L14	2u2
37	1	L9	u22

38	1	L10	22uH
39	1	L11	2.2uH
40	1	L13	LCAVO
41	6	Q1,Q4,Q5,Q6,Q9,Q13	BC847
42	2	Q3,Q2	BC857
43	4	Q7,Q8,Q11,Q12	MMBFJ310
44	1	Q10	BFR540
45	6	RV1,RV2,RV3,RV4,RV5,RV11	TR10K
46	2	RV6,RV7	TR5K
47	3	RV8,RV9,RV10	TRSMD500
48	5	R1,R2,R3,R4,R36	2K49
49	2	R5,R71	51H0
50	16	R6,R7,R9,R12,R13,R25,R30, R34,R38,R52,R53,R92,R93, R95,R96,R141	10K0
51	8	R8,R15,R19,R73,R84,R85, R87,R89	1K0
52	4	R10,R39,R40,R41	49K9
53	2	R11,R131	100K
54	1	R14	100K0
55	1	R16	2M2
56	1	R17	1uF
57	3	R18,R118,R119	330H0
58	1	R20	17K4
59	2	R22,R21	1M0
60	11	R23,R74,R86,R94,R97,R102, R106,R107,R108,R109,R113	4K75
61	2	R24,R78	47
62	2	R26,R35	15K0
63	1	R27	12K1
64	2	R28,R58	2K21
65	6	R29,R42,R43,R44,R98,R137	100H0
66	1	R31	604H0
67	2	R32,R33	10H0
68	1	R37	560H0
69	3	R45,R68,R69	4K99
70	1	R46	5K49
71	6	R47,R49,R54,R55,R56,R57	3K16
72	1	R48	442H0
73	2	R50,R72	3K83
74	2	R51,R64	316K0
75	2	R59,R62	2K67
76	1	R60	5K36
77	1	R61	1K58
78	1	R63	4K64
79	1	R65	51
80	1	R66	3K01
81	2	R67,R70	5K11
82	4	R76,R77,R117,R130	22H0
83	4	R79,R80,R81,R82	47K5
84	2	R83,R88	470K
85	1	R90	274K0
86	1	R91	220
87	1	R99	470H0
88	2	R145,R101	2K2
89	2	R103,R105	274K
90	5	R104,R110,R111,R112,R136	6K81
91	2	R114,R115	8H2
92	1	R116	120

93	1	R120	68
94	1	R121	6H8
95	2	R122,R135	56
96	4	R123,R124,R125,R134	150
97	1	R126	15K
98	1	R127	82
99	2	R129,R128	27
100	1	R132	10
101	1	R133	330K
102	2	SW1,SW2	SWDIP2
103	1	TCX1	STO-7D52
104	15	TP1,TP2,TP3,TP4,TP5,TP6, TP7,TP8,TP9,TP10,TP11, TP12,TP13,TP14,TP15	TP
105	1	U1	7815
106	2	U2,U13	TL071
107	3	U3,U5,U11	LM358SMD
108	2	U12,U4	TL072
109	1	U6	LM393SMD
110	2	U8,U7	LF347SMD
111	1	U9	MB15E06
112	1	U10	MC78LC30
113	1	U14	4070
114	1	Y1	MAR6

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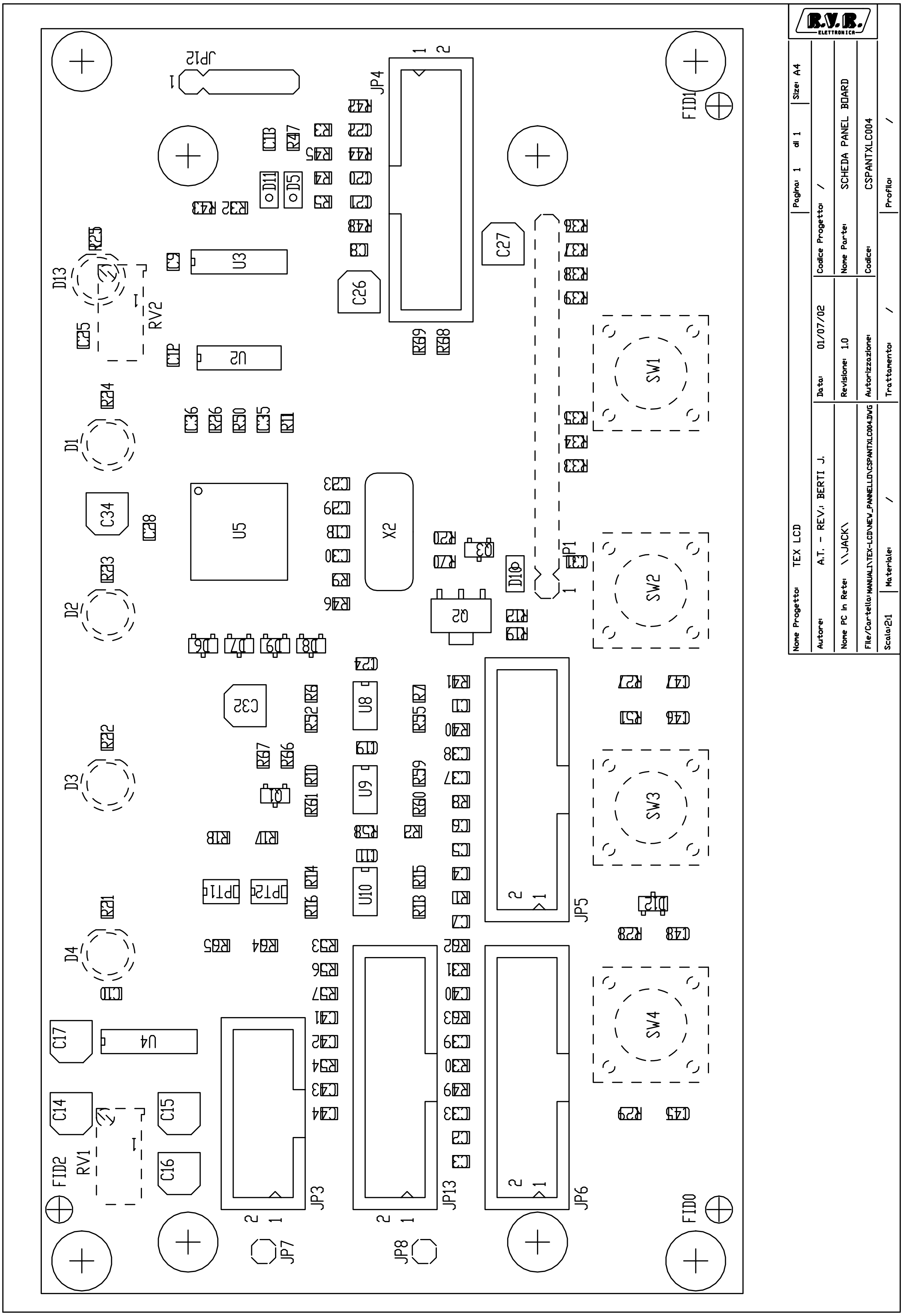

Nome Progetto: Stadio Finale TEX LCD
Autore: REV.: BERTI J.
Data: 30/05/02
Revisione: 1.2
Nome Parte: Disposizione Componenti
Codice: CSRF30TEXLCD
Size: A3
15P D-SUB MALE
FILTER CONNECTOR
CONEC

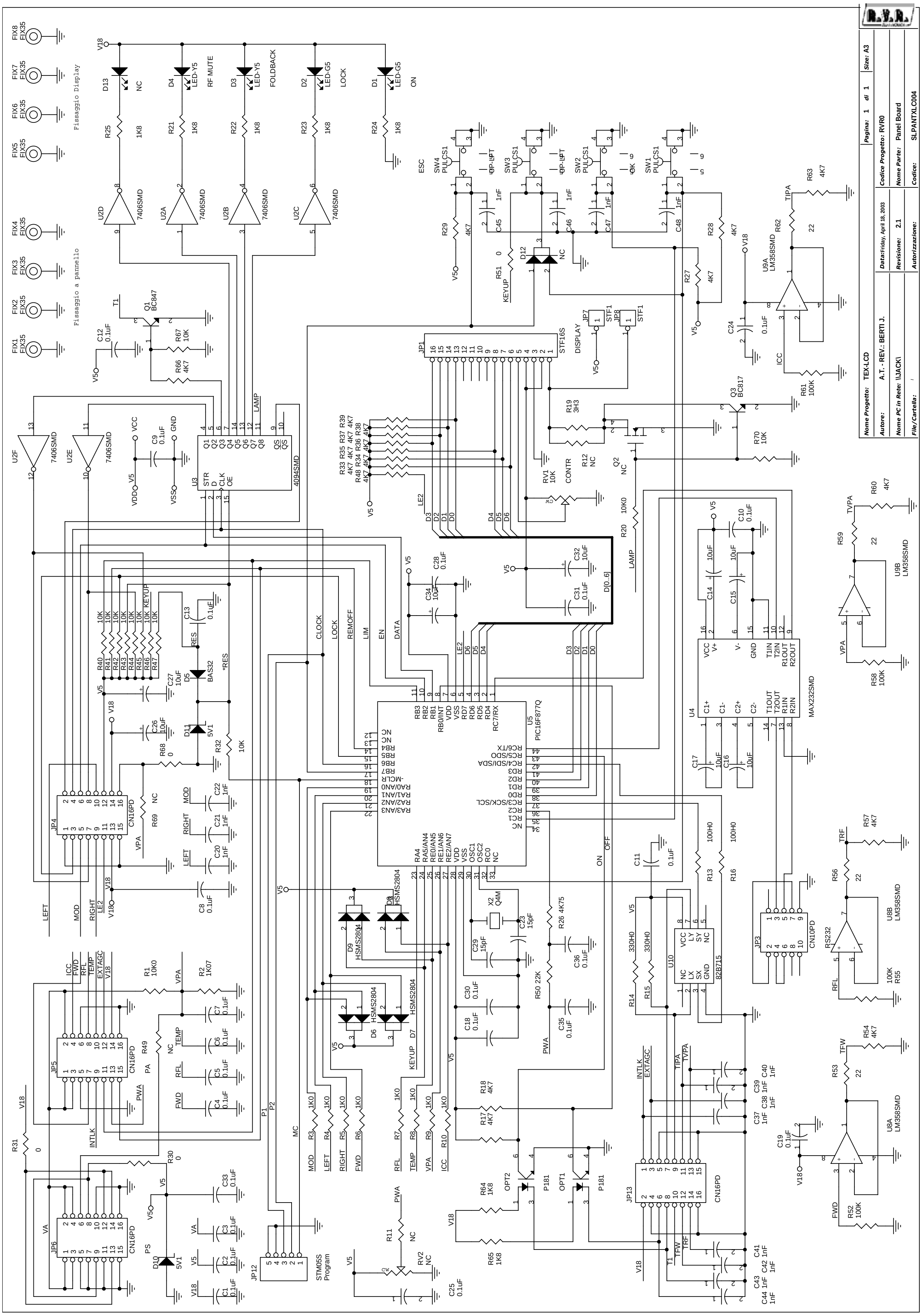

CN2 = OUT 30 W (CONNETTORE N DA PANNELLO A FLANGIA PICCOLA)
CN3 = OUT -300B (CONNETTORE BNC DA PANNELLO A VITE)
LOW PASS FILTER
CAVO CON NUCLEO TOROIDALE
SOFT START
CONNETTORE FILTRATO
C78-C73-C74= Per questione di affidabilità e bontà dei condensatori chip in questa posizione è meglio utilizzare 2 componenti di 1/2 valore in parallelo , da questo il nome 78a ecc

FINALE ECOTEX 20W   Bill Of Materials   Page1

Item	Q.ty	Reference	Part
1	1	CN1	N
2	2	CN2,CN3	BNC
3	23	C1,D6,R17,C20,R36,R39, R43,R58,C58,R62,R66,R67, R68,R69,C70,R73,C79,C80, C81,R83,C86,C88,C89	NC
4	11	C2,C7,C11,C14,C15,C19, C25,C26,C42,C43,C99	1nCH
5	17	C3,C8,C9,C10,C18,C21, C22,C27,C39,C40,C41,C44, C54,C92,C93,C94,C95	1nFCH
6	6	C4,C6,C16,C23,C97,C98	100nFCH
7	5	C12,C17,C52,C101,C102	10nFCH
8	2	C13,C24	C
9	11	C29,C30,C31,C32,C33,C34, C35,C36,C37,C38,C47	1nF
10	2	C46,C45	100uF 35v
11	2	C48,C55	100nF
12	8	C49,C51,C73a,C73,C74a, C74,C78a,C78	220pFCH
13	3	C50,C53,C69	680pF HQ
14	1	C56	68 HQ
15	2	C57,R55	100CH
16	7	C59,C60,C64,C65,C66,C67, C68	27pFHQ
17	1	C61	2p2CH
18	2	C72,C62	2p7CH
19	1	C63	27pF HQ
20	1	C71	6-30
21	2	C77,C75	4p7HQ
22	1	C76	10pFHQ
23	1	C82	150pF HQ
24	1	C83	100pF HQ
25	2	C90,C87	56 HQ
26	1	C91	N.C.
27	1	C96	10uF16VSMD
28	1	C100	22uF 16V
29	1	DIR1	TRANSMISSION LINE
30	1	D1	Z15VSMD
31	5	D2,D3,D5,D7,D13	BAV70
32	1	D4	LED3R
33	1	D8	5V1SMD
34	1	D9	3V3SMD
35	2	D10,D11	HP2008
36	1	D12	9V1SMD
37	1	JP1	JUMPER
38	2	L1,L2	VK200
39	11	L3,L7,L8,L9,L10,L11,L12, L13,L15,L16,L17	IND
40	1	L4	2u2CH
41	1	L5	2uH2
42	2	L14,L6	Strip Line
43	1	P1	DB15
44	1	Q5	MMBT5401LT1

45	1	Q6	BLW86
46	2	Q9,Q7	BFR540
47	1	Q8	BLF244
48	4	Q10,Q12,Q13,Q14	BC847
49	1	Q11	BC857
50	3	RV1,RV2,RV3	47K
51	1	RV4	TM5K
52	2	RV5,RV6	5K
53	22	R1,R13,R15,R20,R21,R28, R32,R33,R34,R38,R41,R44, R45,R46,R76,R77,R84,R85, R86,R87,R88,R89	4K7CH
54	13	R2,R9,R18,R24,R25,R31, R47,R48,R49,R50,R51,R52, R53	1KCH
55	4	R3,R27,R29,R65	10CH
56	1	R4	0.1
57	7	R6,R10,R11,R14,R26,R74, R75	10KCH
58	1	R8	270HOCH
59	1	R19	470CH
60	1	R22	1K0CH
61	1	R23	4K75CH
62	2	R42,R30	100KCH
63	2	R82,R37	22KCH
64	1	R40	0
65	2	R54,R56	10*
66	3	R57,R60,R61	47H*
67	1	R59	220H
68	1	R63	1K
69	1	R64	1HCH
70	3	R70,R71,R79	47HCH
71	1	R72	100HCH
72	1	R78	470HCH**
73	1	R80	1MCH
74	1	R81	10K
75	12	TP1,TP2,TP3,TP4,TP5,TP6, TP7,TP8,TP9,TP10,TP11, TP12	TP
76	3	U2,U3,U4	LM358A
77	1	U5	LM50
78	1	U6	TL072
79	1	U8	7805SMD
80	1	C84	18pF
81	1	C5	N.C.

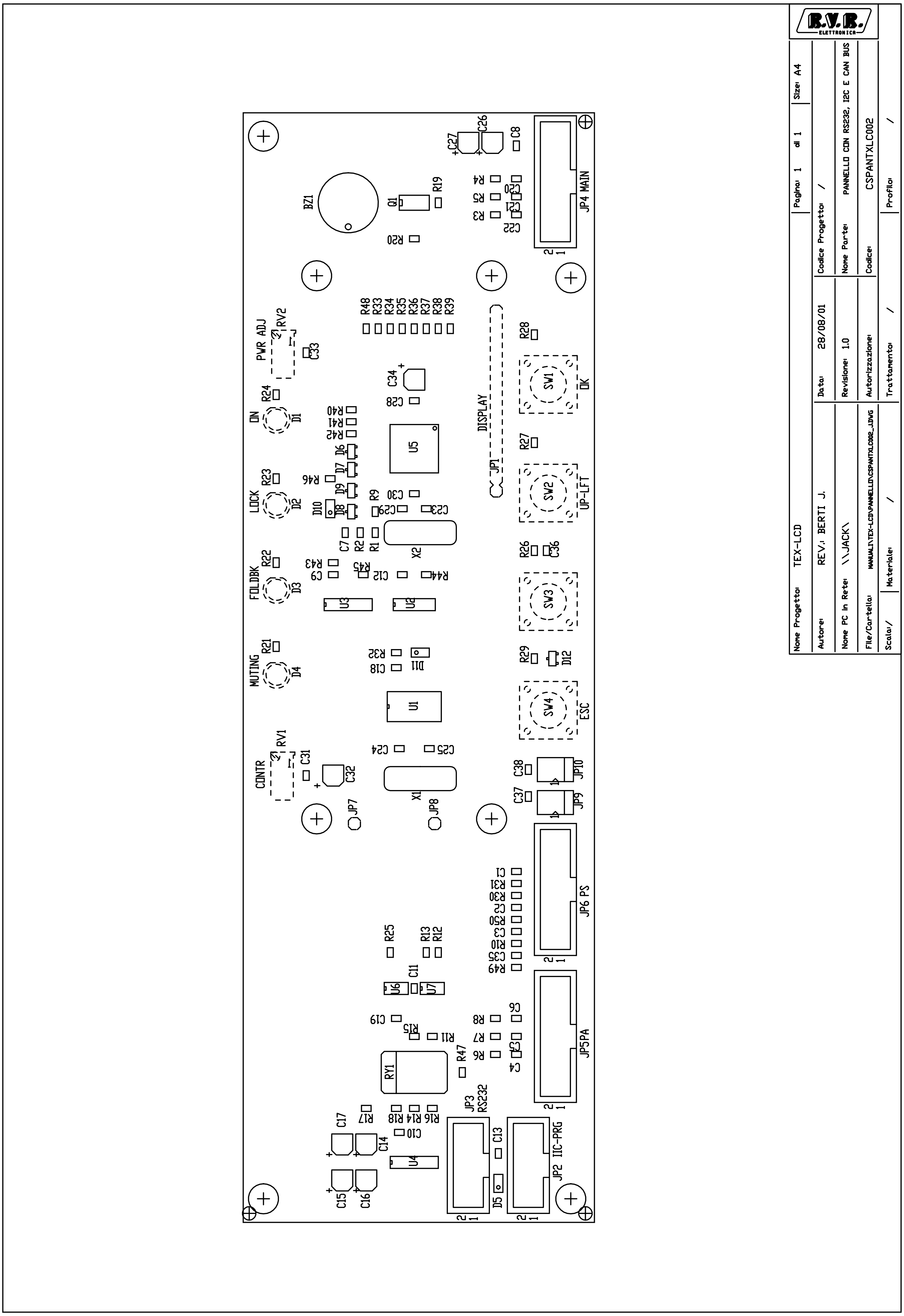

TEX LCD
A.T. - REV.: BERTI J.
SCHEDA PANEL BOARD
CSPANTXLC004
01/07/02
1.0

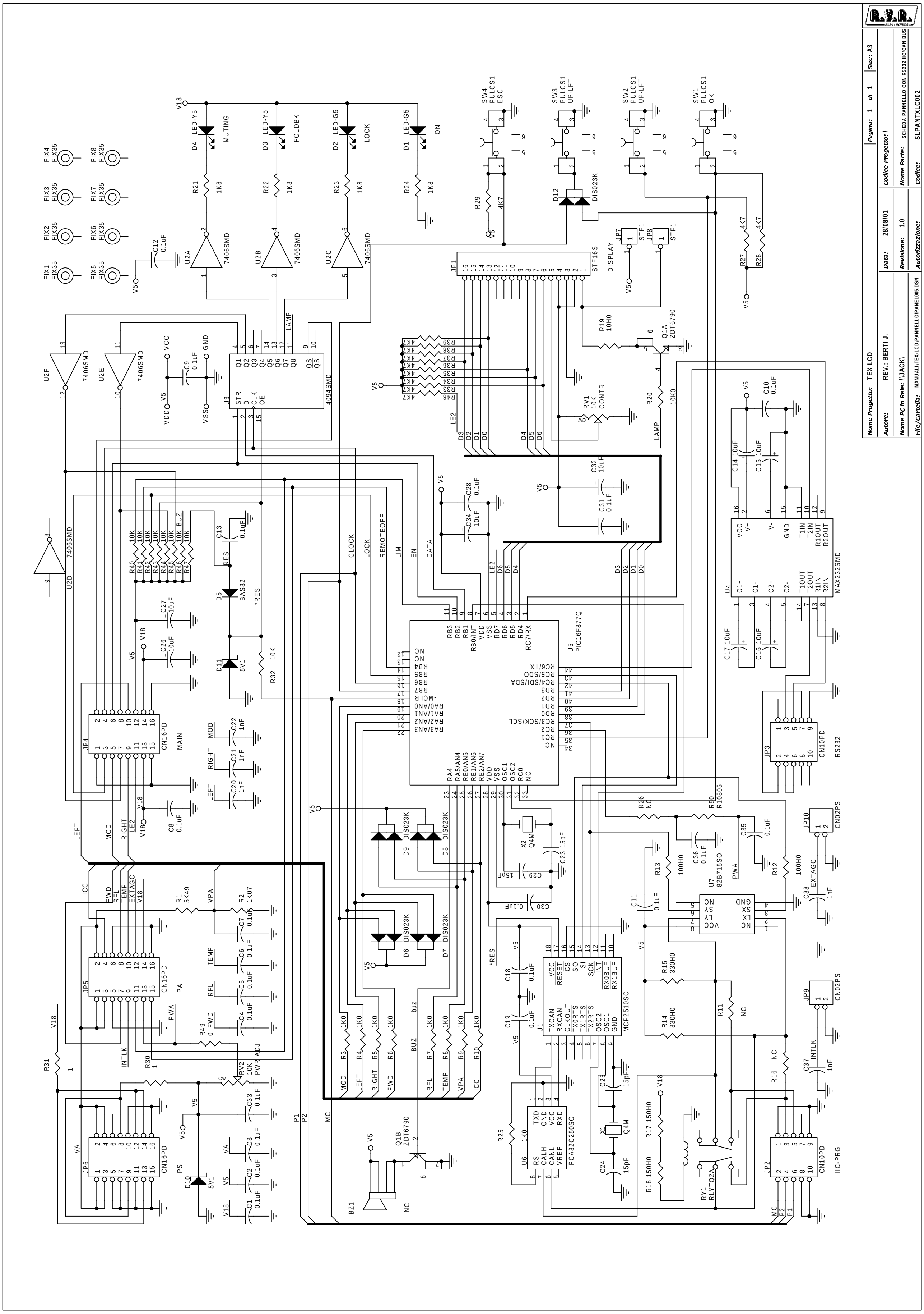

Nome Progetto: TEX-LCD
Autore: A.T. - REV.: BERTI J.
Nome Parte: Panel Board
Codice: SLPANTXLC004
Revisione: 2.1
Size: A3

Panel Board Bill Of MaterialsPage1

Item	Q.ty	Reference	Part
1	23	C1,C2,C3,C4,C5,C6,C7,C8, C9,C10,C11,C12,C13,C18, C19,C24,C25,C28,C30,C31, C33,C35,C36	0.1uF
2	8	C14,C15,C16,C17,C26,C27, C32,C34	10uF
3	15	C20,C21,C22,C37,C38,C39, C40,C41,C42,C43,C44,C45, C46,C47,C48	1nF
4	2	C29,C23	15pF
5	2	D1,D2	LED-G5
6	2	D3,D4	LED-Y5
7	1	D5	BAS32
8	4	D6,D7,D8,D9	HSMS2804
9	2	D11,D10	5V1
10	8	RV2,Q2,R11,R12,D12,D13, R49,R69	NC
11	8	FIX1,FIX2,FIX3,FIX4,FIX5, FIX6,FIX7,FIX8	FIX35
12	1	JP1	STF16S
13	1	JP3	CN10PD
14	4	JP4,JP5,JP6,JP13	CN16PD
15	2	JP8,JP7	STF1
16	1	JP12	STM05S
17	2	OPT1,OPT2	P181
18	1	Q1	BC847
19	1	Q3	BC817
20	12	RV1,R32,R40,R41,R42,R43, R44,R45,R46,R47,R67,R70	10K
21	2	R1,R20	10K0
22	1	R2	1K07
23	8	R3,R4,R5,R6,R7,R8,R9,R10	1K0
24	2	R13,R16	100H0
25	2	R15,R14	330H0
26	18	R17,R18,R27,R28,R29,R33, R34,R35,R36,R37,R38,R39, R48,R54,R57,R60,R63,R66	4K7
27	1	R19	3H3
28	7	R21,R22,R23,R24,R25,R64, R65	1K8
29	1	R26	4K75
30	4	R30,R51,R68,R31	0
31	1	R50	22K
32	4	R52,R55,R58,R61	100K
33	4	R53,R56,R59,R62	22
34	4	SW1,SW2,SW3,SW4	PULCS1
35	1	U2	7406SMD
36	1	U3	4094SMD
37	1	U4	MAX232SMD
38	1	U5	PIC16F877Q
39	2	U8,U9	LM358SMD
40	1	U10	82B715
41	1	X2	Q4M

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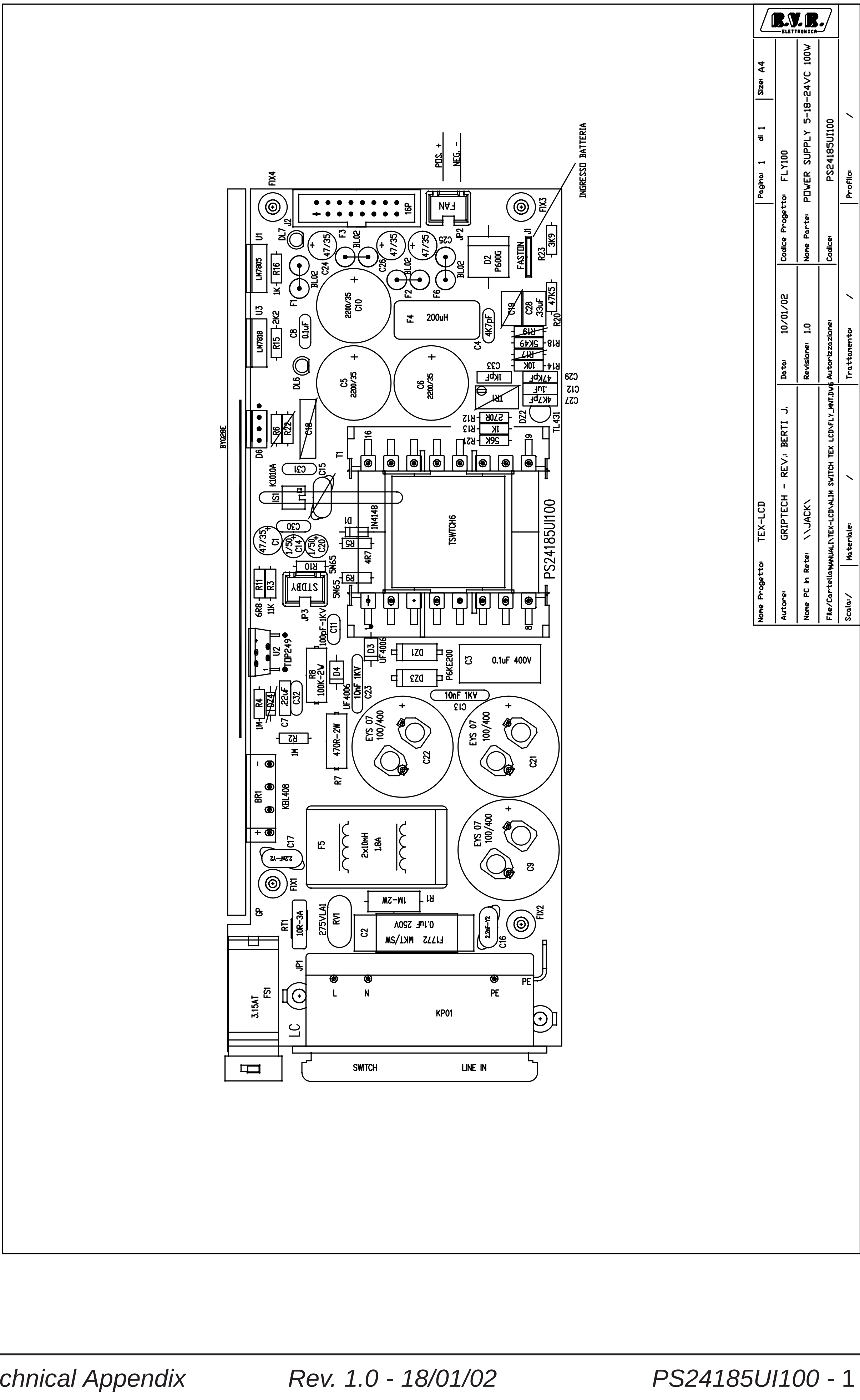

Nome Progetto: TEX-LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\PANNELLO\CSPANTXLC002_1.DWG
Scala: /
Materiale: /
Data: 28/08/01
Revisione: 1.0
Autorizzazione:
Trattamento: /
Codice Progetto: /
Nome Parte: PANNELLO CON RS232, I2C E CAN BUS
Codice: CSPANTXLC002
Profilo: /
Pagina: 1 di 1
Size: A4
DISPLAY
PWR ADJ
CONTR
MUTING
FOLDBK
LOCK
ON
JP4 MAIN
JP6 PS
JP5PA
JP3 RS232
JP2 IIC-PRG
OK
UP-LFT
ESC

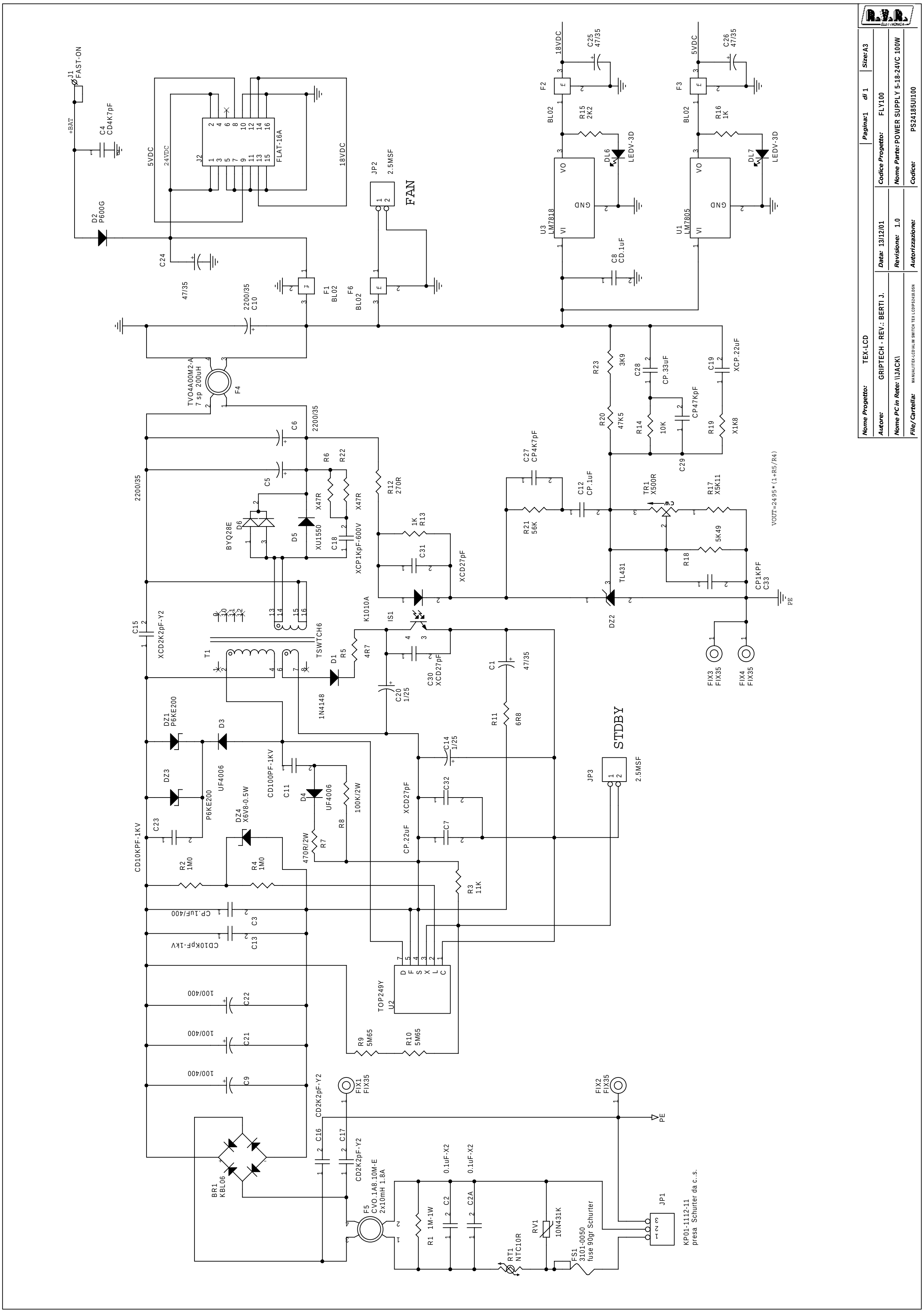

Nome Progetto: TEX LCD
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
Data: 28/08/01
Revisione: 1.0
Nome Parte: SCHEDA PANNELLO CON RS232 IIC/CAN BUS
Codice: SLPANTXLC002
Pagina: 1 di 1
Size: A3

SLPANTXLC002 Bill Of Materials Page1

Item	Q.ty	Reference	Part
1	21	C1,C2,C3,C4,C5,C6,C7,C8, C9,C10,C11,C12,C13,C18, C19,C28,C30,C31,C33,C35, C36	0.1uF
2	8	C14,C15,C16,C17,C26,C27, C32,C34	10uF
3	5	C20,C21,C22,C37,C38	1nF
4	4	C23,C24,C25,C29	15pF
5	2	D2,D1	LED-G5
6	2	D3,D4	LED-Y5
7	1	D5	BAS32
8	5	D6,D7,D8,D9,D12	DIS023K
9	2	D11,D10	5V1
10	8	FIX1,FIX2,FIX3,FIX4,FIX5, FIX6,FIX7,FIX8	FIX35
11	1	JP1	STF16S
12	2	JP2,JP3	CN10PD
13	3	JP4,JP5,JP6	CN16PD
14	2	JP8,JP7	STF1
15	2	JP10,JP9	CN02PS
16	1	Q1	ZDT6790
17	11	RV1,RV2,R32,R40,R41,R42, R43,R44,R45,R46,R47	10K
18	1	RY1	RLYTQ2A
19	1	R1	5K49
20	1	R2	1K07
21	9	R3,R4,R5,R6,R7,R8,R9,R10, R25	1K0
22	4	BZ1,R11,R16,R26	NC
23	2	R12,R13	100H0
24	2	R14,R15	330H0
25	2	R18,R17	150H0
26	1	R19	10H0
27	1	R20	10K0
28	4	R21,R22,R23,R24	1K8
29	11	R27,R28,R29,R33,R34,R35, R36,R37,R38,R39,R48	4K7
30	2	R30,R31	1
31	1	R49	0
32	1	R50	R10805
33	4	SW1,SW2,SW3,SW4	PULCS1
34	1	U1	MCP2510SO
35	1	U2	7406SMD
36	1	U3	4094SMD
37	1	U4	MAX232SMD
38	1	U5	PIC16F877Q
39	1	U6	PCA82C250SO
40	1	U7	82B715SO
41	2	X1,X2	Q4M

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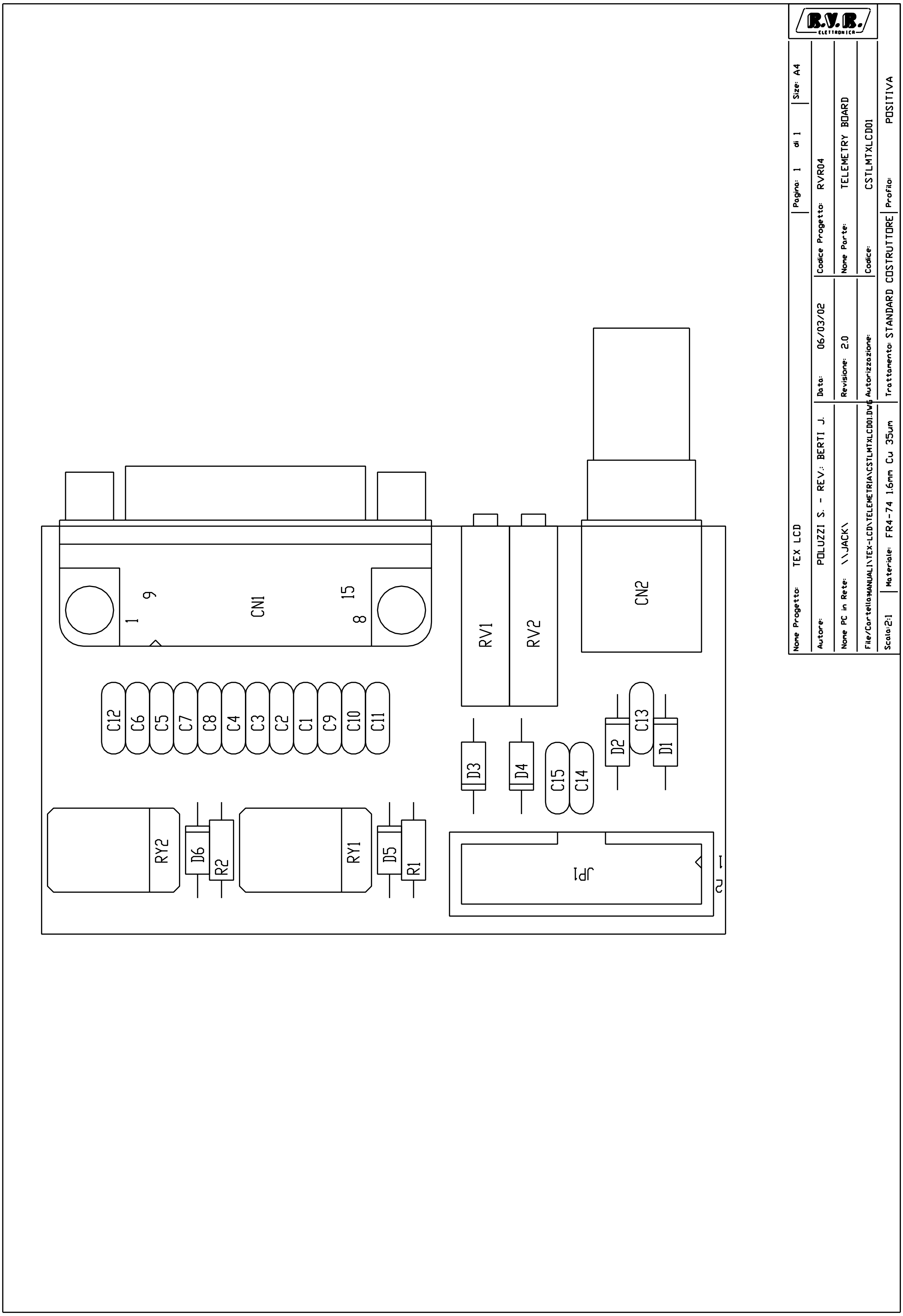

INGRESSO BATTERIA
POS. +
NEG. -
PS24185UI100
SWITCH
LINE IN
Nome Progetto: TEX-LCD
Autore: GRIPTECH - REV.: BERTI J.
Nome PC in Rete: \\JACK\
Data: 10/01/02
Revisione: 1.0
Codice Progetto: FLY100
Nome Parte: POWER SUPPLY 5-18-24VC 100W
Codice: PS24185UI100
Pagina: 1 di 1
Size: A4
Scala: /
Materiale: /
Trattamento: /
Profilo: /


Nome Progetto: TEX-LCD
Autore: GRIPTECH - REV.: BERTI J.
Pagina:1 di 1
Size:A3
Codice Progetto: FLY100
Nome Parte: POWER SUPPLY 5-18-24VC 100W
Codice: PS24185UI100
Data: 13/12/01
Revisione: 1.0
Autorizzazione:
FAN
STDBY
VOUT=2495*(1+R5/R4)

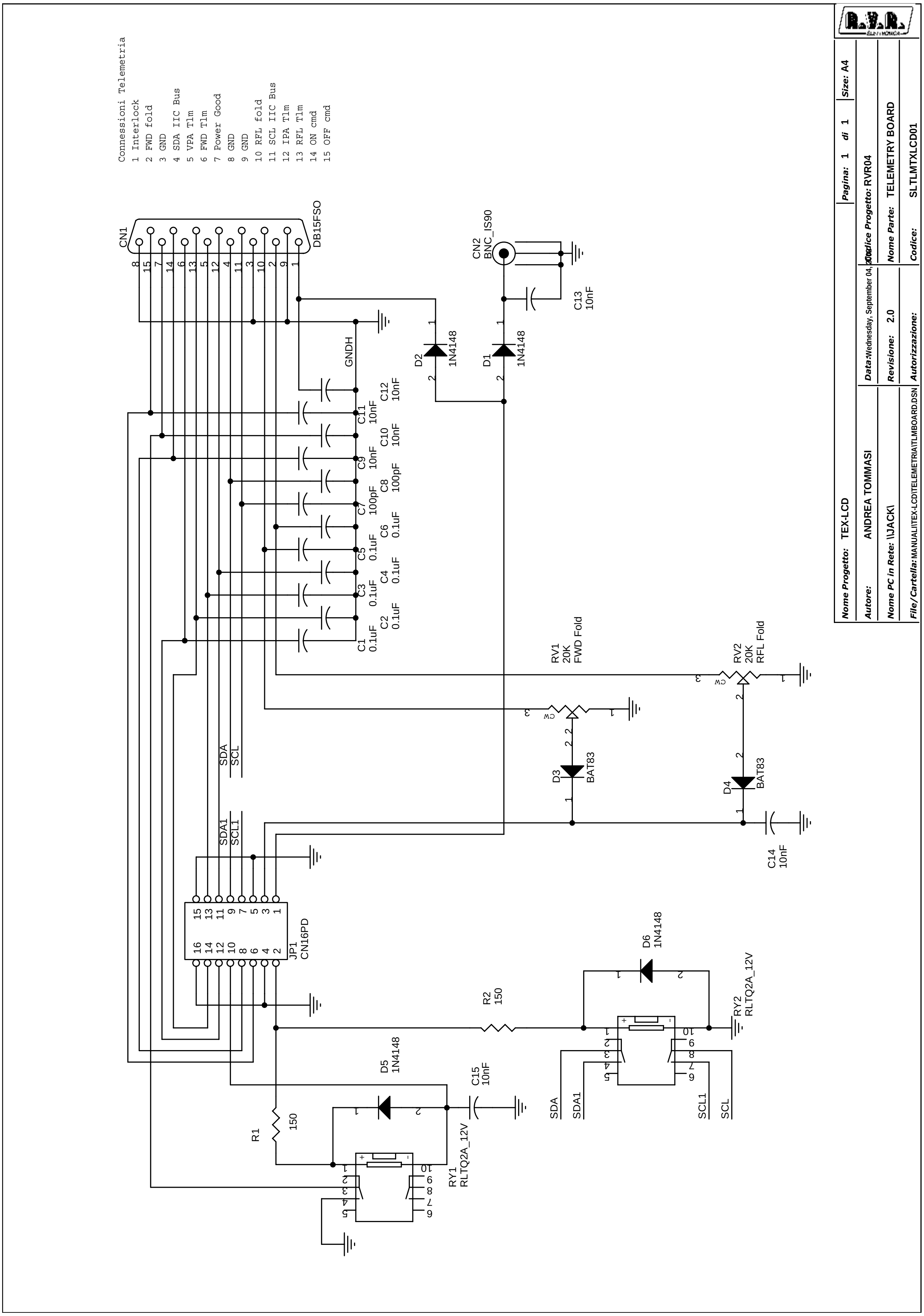
PS24185UI100 Bill Of Materials Page1

Item	Q.ty	Reference	Part
1	1	BR1	KBL06
2	4	C1,C24,C25,C26	47/35
3	2	C2A,C2	0.1uF-X2
4	1	C3	CP.1uF/400
5	1	C4	CD4K7pF
6	3	C5,C6,C10	2200/35
7	1	C7	CP.22uF
8	1	C8	CD.1uF
9	3	C9,C21,C22	100/400
10	1	C11	CD100PF-1KV
11	1	C12	CP.1uF
12	2	C23,C13	CD10KpF-1kV
13	2	C14,C20	1/25
14	1	C15	XCD2K2pF-Y2
15	2	C16,C17	CD2K2pF-Y2
16	1	C18	XCP1KpF-600V
17	1	C19	XCP.22uF
18	1	C27	CP4K7pF
19	1	C28	CP.33uF
20	1	C29	CP47KpF
21	3	C30,C31,C32	XCD27pF
22	2	DL6,DL7	LEDV-3D
23	2	DZ3,DZ1	P6KE200
24	1	DZ2	TL431
25	1	DZ4	X6V8-0.5W
26	1	D1	1N4148
27	1	D2	P600G
28	2	D4,D3	UF4006
29	1	D5	XU1550
30	1	D6	BYQ28E
31	1	FS1	3101-0050
32	4	F1,F2,F3,F6	BL02
33	1	F4	TVO4A00M2-A
34	1	F5	CVO.1A8.10M-E
35	1	JP1	KP01-1112-11
36	2	JP3,JP2	2.5MSF
37	1	J1	FAST-ON
38	1	J2	FLAT-16A
39	1	RT1	NTC10R
40	1	RV1	10N431K
41	1	R1	1M-1W
42	2	R2,R4	1M0
43	1	R3	11K
44	1	R5	4R7
45	2	R6,R22	X47R
46	1	R7	470R/2W
47	1	R8	100K/2W
48	2	R10,R9	5M65
49	1	R11	6R8
50	1	R12	270R
51	2	R16,R13	1K
52	1	R14	10K
53	1	R15	2K2
54	1	R17	X5K11

55	1	R18	5K49
56	1	R19	X1K8
57	1	R20	47K5
58	1	R21	56K
59	1	R23	3K9
60	1	TR1	X500R
61	1	T1	TSWTCH6
62	1	U1	LM7805
63	1	U2	TOP249Y
64	1	U3	LM7818



Nome Progetto: TEX LCD
Autore: POLUZZI S. - REV.: BERTI J.
Data: 06/03/02
Codice Progetto: RVR04
Pagina: 1 di 1
Size: A4
Nome PC in Rete: \\JACK\
Revisione: 2.0
Nome Parte: TELEMETRY BOARD
File/Cartella: MANUALI\TEX-LCD\TELEMETRIA\CSTLMTXLCD01.DWG
Autorizzazione:
Codice: CSTLMTXLCD01
Scala: 2:1
Materiale: FR4-74 1.6mm Cu 35um
Trattamento: STANDARD COSTRUTTORE
Profilo: POSITIVA
CN1
CN2
RV1
RV2
C12 C6 C5 C7 C8 C4 C3 C2 C1 C9 C10 C11
C13 C14 C15
D1 D2 D3 D4 D5 D6
RY1 RY2
R1 R2
JP1


Connessioni Telemetria
1 Interlock
2 FWD fold
3 GND
4 SDA IIC Bus
5 VPA Tlm
6 FWD Tlm
7 Power Good
8 GND
9 GND
10 RFL fold
11 SCL IIC Bus
12 IPA Tlm
13 RFL Tlm
14 ON cmd
15 OFF cmd
Nome Progetto: TEX-LCD
Autore: ANDREA TOMMASI
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX-LCD\TELEMETRIA\TLMBOARD.DSN
Pagina: 1 di 1
Size: A4
Codice Progetto: RVR04
Nome Parte: TELEMETRY BOARD
Codice: SLTLMTXLCD01
Revisione: 2.0
Autorizzazione:

SLTLMTXLCD01 Bill Of Materials Page1

Item	Quantity	Reference	Part	Description
1	1	CN1	DB15FSO	DB15FCSH
2	1	CN2	BNC_IS90	BNCHCS
3	6	C1,C2,C3,C4,C5,C6	0.1uF	CCP5
4	2	C7,C8	100pF	CCP5
5	7	C9,C10,C11,C12,C13,C14, C15	10nF	CCP5
6	4	D1,D2,D5,D6	1N4148	DO35
7	2	D3,D4	BAT83	DO35
8	1	JP1	CN16PD	FLAT16V
9	2	RV1,RV2	20K	70Y
10	2	RY2,RY1	RLTQ2A_12V	RLYTQ2
11	2	R1,R2	150	R1/4W

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